# THE IRON AGE

A Review of the Hardware, Iron, Mac... l Trades.

Published every Thursday Morning by David Williams Co., 232-238 William St., New York.

*Vol 69: No. 26* *New York, Thursday, June 26, 1902.* $5.00 a Year, including Postage. Single Copies, Ten Cents.

# THE IRON AGE

THURSDAY, JUNE 26, 1902.

## The Blake & Johnson Thread Rolling Machines.

We illustrate two machines built by Blake & Johnson of Waterbury, Conn., for rolling threads. By this process the finished article is much stronger than if cut with an ordinary threading die, as there is no material removed, and as the strongest part of the stock, the outside, is rolled up to form the thread. The two machines are of similar design, with the exception of the method of driving. In the first the driving shaft is placed between the slide and the crank; in the other the crank is in the center. Both are back geared 5 to 1, and both will operate as fast as the blanks can be inserted.

The arrangement of the dies will be understood from the sectional drawing, Fig. 3. The stationary die is held in an adjustable holder placed in the frame. The movable die is carried by a slide, which is reciprocated by means of the crank and connecting rod. In order to reduce friction the slide bears against a series of steel rollers inserted between it and the roll carriage holder. Both the holder and slide are faced with a hardened and ground steel plate.

The first machine occupies a floor space 44 x 76 inches and weighs 3750 pounds; the second measures 53 x 136 inches and weighs 10,000 pounds.

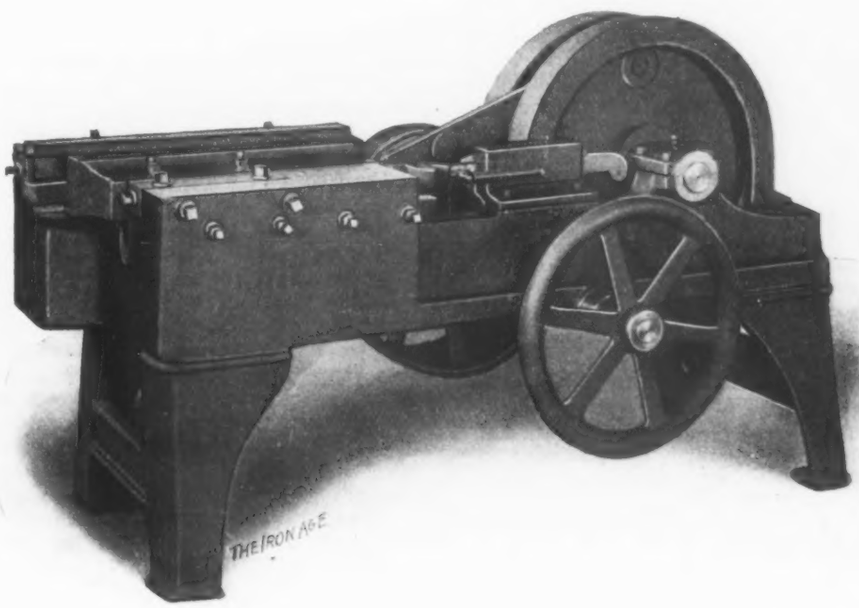



*Fig. 1.—Machine for Rolling Threads up to ¾ Inch Diameter by 2½ Inches Long.*

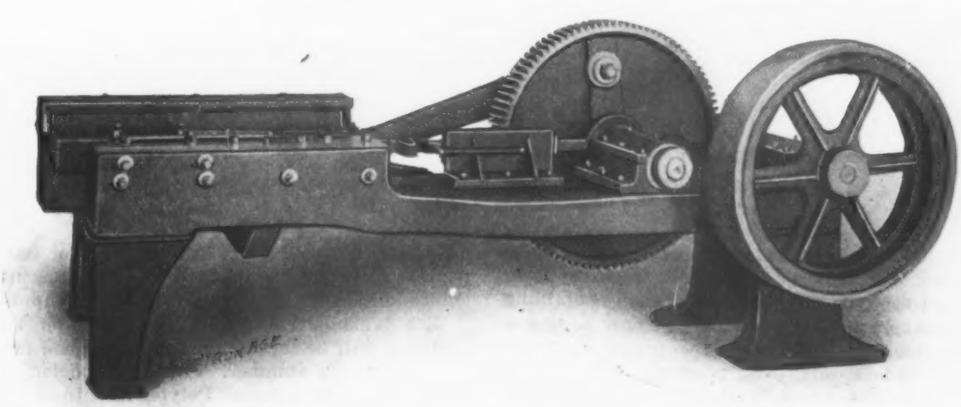


*Fig. 2.—Machine for Rolling Threads up to 1 Inch Diameter by 3 Inches Long.*

THE BLAKE & JOHNSON THREAD ROLLING MACHINES.

A press dispatch from Madison, Wis., dated June 19, states that the Illinois Steel Company have won their suit against the Jones Island squatters, the Supreme Court reversing the decision of the Milwaukee Circuit Court in favor of the latter. The decision holds that the Steel Company, at the time of the commencement of the action, were the owners of the premises in dispute by title under Government patent. The company thus secure the ownership of a large tract of valuable land in

the vicinity of their Milwaukee Works, which has been the subject of litigation for a number of years. The land is largely covered by houses built by squatters.

## Worcester Manufacturing Notes.

WORCESTER, MASS., June 23, 1902.—After a prolonged and almost bitter fight the Massachusetts Senate has killed the so-called Hagberg bill, which was aimed at the system of payment of wages by check by the Washburn & Moen department of the American Steel & Wire Company. Every plant of the United States Steel Corporation pays wages by check, because the system is more economical and also because it is important as a part of the system of auditing. Some workmen and small store keepers at Quinsigamond, where the South works are located, expressed dissatisfaction at the operation of the check system, and politicians took advantage of the sentiment and introduced a bill in the Legislature to compel manufacturing corporations to pay wages in cash.

The Reed & Prince Mfg. Company, manufacturers of wood screws, bolts and rivets, have bought about 2 acres of land at New Worcester, on the Boston & Albany Railroad, and will erect on the premises a shop containing 100,000 square feet of floor space. They now occupy a shop on Tainter street, formerly the property of the Sullivan-Forehand Estate, but recently sold to the Crompton & Knowles Loom Works, which will occupy the premises as soon as the Reed & Prince Company's lease expires, a year from next January. The grading and excavating for the new shop will be done this year, that work may begin early next spring. The new shop will provide twice the floor space of the present building, which will permit of considerable growth. The business was established on a small scale 15 years ago, and has grown to employ 375 hands. The members of the firm are Edgar Reed, Thomas Prince and William L. Ames.

The Wright & Colton Wire Cloth Company have voted to increase their capital stock from $250,000 to $350,000. Only $50,000 of the new stock will be issued at the present time. It will be a preferred stock, the company being the first to avail themselves of a new law permitting corporations organized under Massachusetts laws to issue preferred stock. The new capital is made necessary by the growth of the business, and from the fact that several new departments are soon to be established by the company.

The capital stock of the Coes Wrench Company has been increased from $100,000 to $150,000, and at the same time the $50,000 capital stock of the Loring Coes & Co., Incorporated, has been liquidated. This is the final step in the consolidation of the Coes interests under the management of the Coes Wrench Company. The name of Loring Coes & Co., Incorporated, will be preserved for its value as associated with the company's machine knife business. However, all business transactions will hereafter be in the name of the Coes Wrench Company. The company's new shop at New Worcester is running full, and the wrench and blade business was never so prosperous as at the present time.

The D. T. Dudley & Son Company of Wilkinsonville, Sutton, have voted to add to their business the manufacture of small tools, and immediate application will be made for a change in the company's charter for that purpose. The business at present is the manufacture of shuttles and shuttle irons. To this will be added the manufacture of such small tools as nail sets, scratch awls and screw drivers. Later on it is possible that the company may go into the manufacture of edge tools.

The edge tool works of Charles Buck, at Millbury, are running full time six days a week for the first time in their history. The business is developing under present conditions of prosperity with great rapidity.

The Washburn shops of the Worcester Polytechnic Institute will be in the market for a good deal of new machinery this summer. President Engler, in his address to the Worcester Polytechnic Institute Alumni Association, made announcement that purchase of machines of the latest types would be made for the shops, and also additional equipment for the electrical laboratories. In addition a large number of new forges will be installed in the forge shop. All these are in addition to the new foundry, for which $30,000 was given the institute by four trustees.

The soft coal situation in Worcester is no longer a cause for anxiety. A week ago manufacturers were worried, as they could get no assurance that their orders would be filled. But during the past few days very large shipments have arrived. J. N.

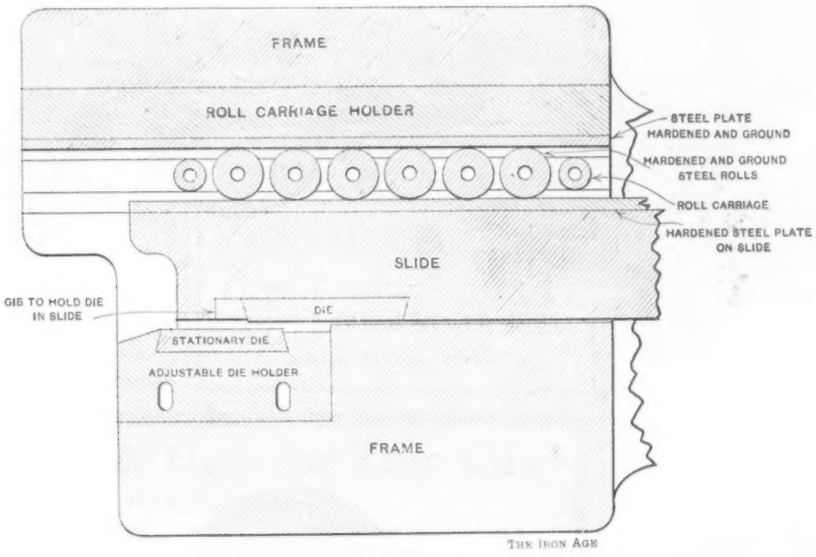



*Fig. 3.—Section Showing Roller Bearing for Movable Die.*

THE BLAKE & JOHNSON THREAD ROLLING MACHINES.

Walter A. Zelnicker, St. Louis, in order to keep the trade fully posted in regard to rails which he has to offer, issues a weekly bulletin outlining fully his entire stock of new and relaying rails, both steel and iron, for steam and electric railways, which embraces many tons carried at yards in East St. Louis, Ill., and at various other points throughout the country.

# The American Society for Testing Materials.

## A Session on Cast Iron.

Saturday morning was devoted to a long and interesting session on cast iron. It was to be opened with a paper on the "Constitution of Cast Iron," by Prof. H. M. Howe, which, however, was not completed for presentation. This was followed by a long contribution from W. G. Scott of the J. I. Case Company on the "Effect of Variations in the Constitution of Cast Iron," to which we shall refer at a later date.

Dr. Albert Sauveur protested against the prevailing opinion that there is little in common between steel and cast iron. He claimed that the two are closely connected, and that when graphitic carbon is removed from cast iron a mass is left behind which is almost identical with steel. In other words, gray cast iron is a steel matrix with graphite particles, and therefore the accumulated knowledge on steel may be directly applied to the matrix. The presence of graphitic carbon decreases the strength of cast iron. Mr. Sauveur pointed out the great value of metallographic methods in studying cast iron. Since the properties of the matrix depend upon the combined carbon, whose determination by chemical methods would call for an elaborate chemical apparatus and yet yield doubtful results, the metallographic method would be found of special service, and would yield results of value in 15 minutes.

Dr. Moldenke protested against a statement incidentally made in the discussion that while iron is unimportant by recalling the fact that fully 600,000 tons annually of castings are of white iron, the greater part thereof chilled.

Dr. Dudley referred to efforts made by him in the early days to predict the depth of chill of car wheel iron from the chemical analysis and the frequent misses which were made. At Altoona the mixture includes 5 to 10 per cent. of old steel rails, and an iron containing 3.25 to 3.60 per cent. of total carbon, about 0.75 per cent. silicon, about 0.50 per cent. manganese, about 0.50 per cent. phosphorus and 0.13 to 0.15 per cent. sulphur. This usually produces a chill of about 1 inch. Dr. Dudley has come to the conclusion that it is difficult to understand the chilling qualities, because identical analysis does not produce like chilling. He suggested that there may be constituents which have been overlooked, possibly oxygen.

Dr. Moldenke referred to the effect of pouring temperatures, and referred to some experiments made in casting from an open hearth furnace with a 12 to 15 ton charge. Dr. Richard Moldenke submitted the following on

### The Present Status of Testing Cast Iron.

Tests of cast iron are carried out in two ways: By means of a supposedly representative bar and by testing to destruction. The latter way is the preferable one, providing that it is fair to both consumer and producer. Our car wheel and coupler tests come under this heading.

It is, however, universally recognized that this system of testing is applicable only to a limited range of castings, and that other methods must be adopted to assure us of good results for the general run of the foundry product. This has always been attempted by means of a test bar, with what chances of success remains to be seen. The tendencies were twofold: First, the short coupon attached to the casting, into which coupon the iron might or might not enter under conditions identical with those of all parts of the casting. Usually the chances were against even a fair representation, and this form of testing is deservedly looked upon with less favor than formerly by those who understand something of the characteristics of cast iron. The second method was to use very long bars (often 5 feet), and test them transversely by the gradual application of a stated load. The bars gave results depending upon the manner and time taken in loading, and are now known to be altogether too favorable to the founder. Moreover, the conditions of the test were exactly the opposite of those met with in practice. An impact test would have been more suitable.

Many have been the tests made on bars, and each line of investigation has had the benefit of at least some previous recorded experience. The result has been the crystallization of ideas which has probably found as good an expression as any in the recent report of the committee appointed by the American Foundrymen's Association, wherein short, heavy, round test bars cast on end are recommended.

There is, however, another idea in the report just alluded to, which is so different from those generally accepted that it must be mentioned. Our American founders recognize the fact that even with the best of iron a casting may be of inferior quality through improper conditions existing at the time of pouring, and this without the knowledge of the average layman. They further know that a weak or unsuitable iron can be strengthened artificially when making test bars, so that it passes muster. Yet the castings will be inferior.

For these reasons, therefore, in adopting the specifications they did, the American foundrymen cut loose from the laudable but entirely impossible attempt to produce test bars which are held to be identical with the casting. They selected a method which would give as nearly a true valuation of the quality of the iron going into the casting as possible. If afterward a casting could be tested to destruction so much the better.

The fact that the iron which goes into a casting is found to be of a suitable quality and of sufficient strength is the only safeguard which can really be expected from the test bar anyhow. This presupposes that the iron is cast into the bars under conditions as fair as possible in the light of our present knowledge, that the bars are of the size and shape which will neutralize as much as possible the variations due to the sand, the pouring temperature and the pouring method; and that no artificial strength or avoidable weakness be tolerated. By making such tests regularly, a founder can quickly satisfy himself and possibly his customer on the score of the quality of the iron poured into the casting.

The question hinges upon whether producers will open their works to customers and give them every facility to judge for themselves by means of the tests as to the quality of the iron, and, on the other hand, whether customers will accept this as an evidence of good faith and of the desire to give them the best of work that can be made. The customer, it may be added, quickly becomes a competent judge of the good or bad conditions prevailing in the various foundries from which he draws his castings, when in constant and direct touch with them.

Thomas D. West of Sharpsville, Pa., read a paper, entitled

### The Need of Foundry Experience for the Proper Inspection and Testing of Cast Iron,

saying, in part:

"Of all metals cast iron is the most complex in its physical structure. This is because of the fact that changes in the rate of cooling like grades of iron and cross sections produce a ralically different crystalline fracture or grain in the iron. Again, by uniform section and constant rate of cooling, but variations in the silicon, sulphur, manganese and phosphorus, we can produce different grades, varying in degrees from a very soft, open grained iron to a hard or chilled one.

"Where inspection of appearances as to smoothness and beauty of finish only is required, or where work is duplicated, as in the case of car wheels, and subjected to certain prescribed tests that have proved proficient by numerous trials, then lack of foundry experience in the inspector may not be of vital importance. Where the inspection is for the strength, solidity or durability in castings that cannot be tested by breaking a duplicate, it is rare that the possession of foundry experience cannot prove of value, as the test bar, or any special method of testing, may often fail utterly in ascertaining the true character of a casting. Foundry experience cannot give an inspector an X-ray eye, with which to see the interior of castings, but it will, to a certain extent,

create good judgment in determining what may be expected, judging from methods used in pouring and feeding to supply the shrinkage of the parts that might be weak from porosity or shrink holes. There may be cases where an inspector with broad experience can fortify his position by watching a mold before it is closed, and being upon the ground at the time of pouring and feeding a casting, as it is not uncommon to have a mold poured with proper feeding heads and pouring gates, and the feeding be such as not to produce a solid casting. Aside from shrink holes, blow holes occur, and it requires foundry experience to judge of their existence.

"Next in order is to judge of the evils of contraction. When castings are of disproportionate sections one part will contract more than another, so as to leave an internal strain that no test bar record can properly define. Such strain may be greatly overcome by methods of cooling after a casting has been poured. Experience in founding enables an inspector to define at what points weakness may exist or where to detect slight cracks."

Asa W. Whitney followed with an elaborate memoir, entitled "A Quick Foundry Contraction Test for Metals," and A. E. Outerbridge, Jr., of Philadelphia presented his paper on "High Strength of White Iron Castings as Influenced by Heat Treatment." It was partly historical, and partly dealt with the methods employed for converting white iron into so-called steel castings by prolonged exposure to heat treatment. Mr. Outerbridge insisted that the practice of calling the product of this method, which is often coupled with the use of some mysterious "medicine" as a blind, steel castings, is injurious to the product which has well defined useful properties. He made the point that the castings so made are different from malleable castings, although the makers of the latter do make castings without the use of any oxidizing material.

Walter Wood of R. D. Wood & Co., Philadelphia, was to speak on the subject,

**Digest of Current Specifications of Cast Iron Pipe.**

He announced, however, that the work undertaken by joint conferences between the leading makers of cast iron pipe and water works engineers had not yet led to final conclusions in the drawing up of standard specifications. There is no wide range between the different specifications, but one of the troubles of the industry is that occasionally the opinion prevails that a good politician will make a good inspector of cast iron water pipe. Mr. Wood urged that the variations in weight be kept in reasonable limits, say about 2 per cent. on the whole contract, while the weight of individual pieces may be 2½ or even 5 per cent. The practice in testing cast iron pipe has changed from the use of a 1-inch round bar with 16,000 pounds tensile strength to a drop test on a 2 x 1 inch bar, on supports 24 inches apart, to sustain a breaking load of 1800 to 2000 pounds. It is also the custom to subject pipe to a hydraulic test, which is not really a test of the casting for strength, but is intended to develop defective pipe. The pressure of 300 pounds per square inch does not approach the destruction limit, and it is seldom that a good casting is broken under the hydraulic test. The formula for the coating of cast iron pipe was first specified by Dr. Angus Smith of Glasgow, a name which still persists in specifications, although it is no longer used. There are now adopted generally a mixture of a distillate of coal tar and oil, the latter to keep the same elastic, applied at a temperature of 300 degrees. The Metropolitan Water Board made an elaborate examination to ascertain whether this could not be improved upon, and came to the conclusion that it gave as lasting and perfect a coating as any other process.

The iron most suitable for cast iron pipe should have phosphorus within the range of 0.5 and 1 per cent., manganese up to 1 per cent., with 0.75 to 1 per cent. most desirable, silicon up to 1.25 per cent in large castings and up to 2.25 per cent. in small castings.

---

The torpedo boat destroyer "Hull" was launched on Saturday afternoon at the yards of the Harlan & Hollingsworth Company, Wilmington, Del. The vessel was christened by Miss Mabel Hull of Newton, Mass., daughter of George A. Hull and a grandniece of Admiral Hull, after whom the vessel is named. The "Hull" is 245 feet long, 23 feet extreme breadth and 6½ feet main draft, with displacement of 408 tons.

---

## High Buildings Liable for Peculiar Damages.

The New York Court of Appeals has recently rendered a decision of interest to all who maintain or contemplate the erection of steel structures in the form of towers or high buildings. The case that has brought forth this interesting and important decision had its origin at Niagara Falls, and was instituted by Charles Davis against the Niagara Falls Tower Company. The latter company have an observation tower about 300 feet high, located on the Riverway, opposite Prospect Park, a section of the New York State Reservation. The site of the tower is not many hundred feet from the American Fall. Mr. Davis is one of the proprietors of the museum adjoining the tower, and the museum building has a glass roof or section.

In winter the spray from the falls fell upon the tower steel work, where it congealed, and in times of thaw plunged down upon the museum, doing damage. It was this that led to the lawsuit, and the Court of Appeals decides that a responsibility confronting owners of tall buildings is the need of guarding against the formation of ice which in falling may damage property beneath. In this case it was decided that one who has erected a building at so great a hight above an adjacent building as to cause the ice, which accumulates upon its sides and top each winter to fall upon and injure his neighbor's building and endanger the safety of its occupants, may be restrained, as for private nuisance, from maintaining such a condition. In the Niagara instance the ice formation was caused by spray drifting from the falls, but the court holds that rain is just as much a natural cause, and to all purposes the same.

The action in question was brought to recover damages and for an injunction to restrain the defendant from so maintaining the tower as to suffer ice to fall therefrom on the plaintiff's property. The trial court had found that the injury to plaintiff's building and the accumulation and fall of ice from the tower on the plaintiff's property recurred each winter during periods of thaw. It further found that the tower was a safe, substantial and suitable structure for the purpose for which it was used. On these facts it decided, as a matter of law, that the maintenance and construction of the tower was a private nuisance, and that the plaintiffs were entitled to a perpetual injunction restraining the defendant from so maintaining the structure that ice would form thereon and fall on the building and premises of the plaintiffs. A reference was ordered to ascertain the plaintiff's damages. On the report of the referee final judgment was entered for an injunction and damages. This judgment was affirmed by the Appellate Division and an appeal taken. In dismissing the matter, in his opinion, Judge Cullen says:

"The law with reference to rainfall seems well settled. So long as the owner of land leaves it in its natural condition he is not required to adopt any measures to prevent the flowing of surface waters from his premises on the adjoining land, but when he puts a structure on the land a contrary rule prevails. Then he must take care of the water that falls on his premises, except in the case of extraordinary storms. It is to be observed that the structure of the tower is not on the division line between the land of the plaintiff and that of the defendants, and, therefore, the ice that is formed on the posts, beams and girders is accumulated wholly on the defendants' land. If the shape of the tower were such that rain falling on the defendants' premises would run down the posts and then be cast on the plaintiff's building, plainly, under the authorities cited, the defendants would be liable. It can make no difference on the question of the defendants' liability that the water, instead of being precipitated on the plaintiff's land, is allowed to congeal and freeze and fall in the form of ice. Nor is it material on the question of liability whether the ice proceeds from the fall of rain or from the spray and mist of Niagara Falls. The latter is just as much a natural cause as the former."

# The New Pittsburgh Plant of the American Bridge Company

The American Bridge Company have acquired an extensive area of land on the Ohio River, near Economy Station, on the P., F. W. & C. Railroad, about 15 miles below Allegheny. The manufacturing site is comprised of about 150 acres lying between the railroad and the river and extending from Economy Station up to the Sewickley Creek, and on this land construction of the new bridge manufacturing plant is begun.

The company have also pre-empted an area of about 125 acres on the upper plateau above the railroad and adjoining the village of the Harmony Society at Economy. This latter property is intended for a residence district. It is the intention to concentrate at this point the older plants of the company in the Pitsburgh district. The plant will be the most extensive of its kind in existence and will have a producing capacity of 15,000 to 20,000 tons per month of miscellaneous structural material. The buildings will all be substantial and permanent structures and all the appliances devised in accordance with the latest experience and arranged for the most economical handling and production of material. Reference to the accompanying plan will indicate the general arrangements of the shops.

These are paralleled by a system of standard gauge tracks, which communicate with all the shops and connect with the Pennsylvania lines. A belt line of 3-foot gauge to be operated electrically also surrounds the works for the convenient transit of men and material in small bulk. Near the center will be situated the receiving stockyard of the establishment, where all the mill material is received and distributed for its passage through the shops. This stockyard is covered by a system of traveling cranes extending from the railroad toward the river and at right angles to the direction in which the material moves. At the delivering ends of the bridge shops similar cranes of greater capacity are located for handling and loading the finished product, and at points elsewhere, as noted on the plan, will be located similar parallel systems of traveling cranes for the convenience of contiguous shops. These cranes have all a uniform span of 60 feet and are interchangeable on their respective runways. Toward the railroad end they conenct with a gantry, which runs parallel with the railroad, by means of which cranes can be transferred from one point to another, as convenience requires, or a special heavy crane can be placed on any runway to facilitate the handling of exceedingly heavy pieces.

### Main Bridge Shop.

The main bridge shop will be a massive building 270 feet wide by 780 feet in length, equipped with tools and handling appliances of modern design. The whole area of this shop will be covered by a system of electric hoists operating transversely. At the lower or discharging end of the shop facilities are provided for handling and machining structural members of over 100 tons in weight and over 120 feet in length. Many of the tools in this shop will be of special design, such as multiple punches for simultaneously punching standard beam connections, and punches with automatic tables or adjustable spacing racks. Multiple radial drills carried on longitudinal moving gantries will serve for the usual drilling and reaming. Riveters of special design will be carried on gantries or traveling wall brackets. All revolving machinery will be electrically driven, no vertical belts being required, thus clearing the whole overhead area for the free use of the electric hoists.

This building is flanked with lateral wings, which serve as tool rooms, shop offices for the foremen, &c. The building will be amply lighted by high sash around the walls, in conjunction with an ample area of skylights in the roof. The general construction of the building, as indeed all of the shops of this plant, will be a skeleton structure of steel, thoroughly braced, and all wall surfaces not of glass will be filled with cement concrete. The only combustible material used will be the wooden plank sheathing for the roof. Longitudinal narrow gauge tracks at suitable intervals extend from the stockyard through the shop to the loading cranes, on which material will be carried by power operated trucks. Arrangements are made for heating the buildings and other provisions made for the comfort and convenience of the workmen.

### Auxiliary Bridge Shop.

Paralleling the main bridge shop and between it and the river space is reserved for an auxiliary bridge shop, the exact dimensions and character of which will be determined later on. This shop will be fitted up for the fabrication of special structural work, such as highway bridges, roofs and material generally of a lighter or more complicated type than that handled in the main bridge shop.

In works of this kind experience has demonstrated the desirability of separate shops for different classes of work, where the character of the tools and the operations to be performed on the material render it advisable to resort to different methods of treatment.

### Templet Shop.

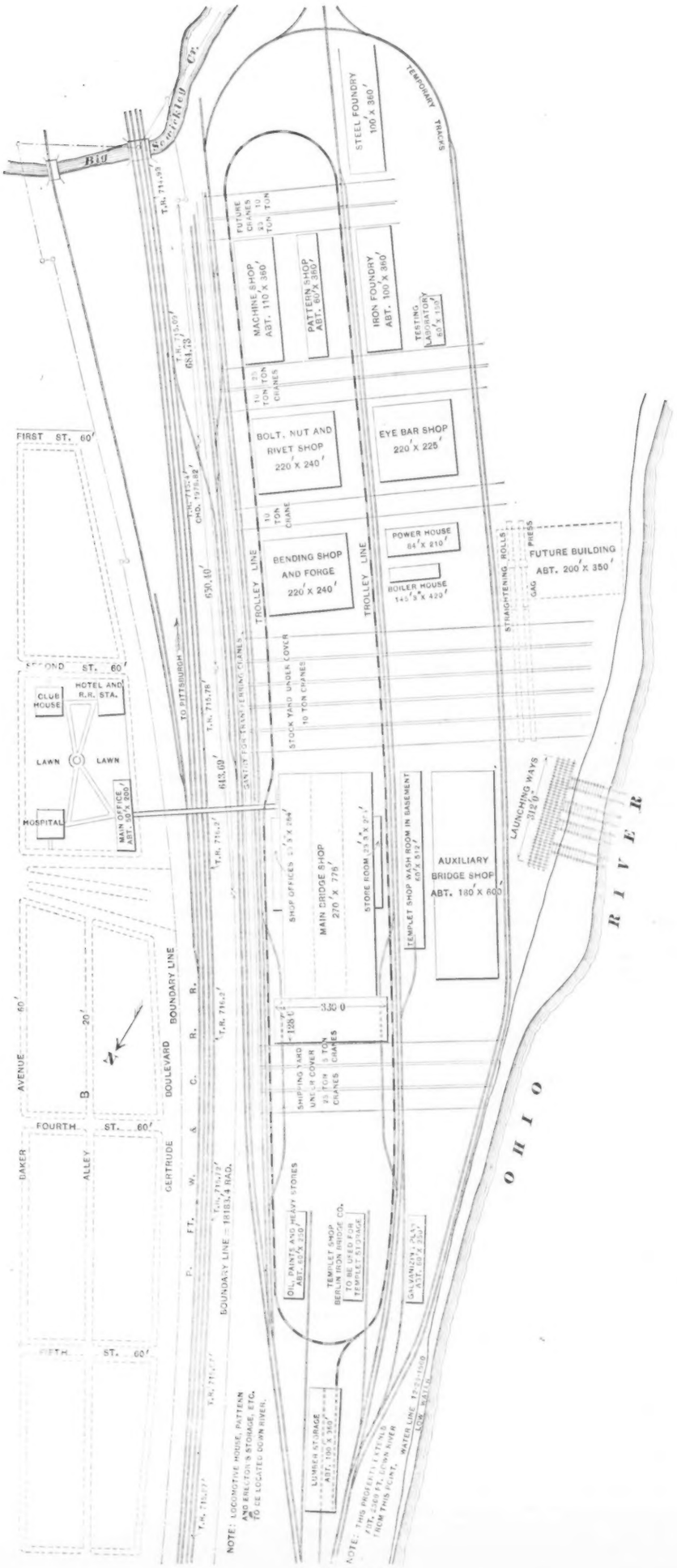
Between these two structural shops will be located a templet shop, which will be a building about 60 feet wide and 500 feet long. This building will be provided with ample facilities for handling and finishing templet lumber and distributing it in the most convenient manner throughout the shop. This shop will be provided with longitudinal galleries along both sides, leaving a central opening to facilitate lighting and ventilating. The main floor of this shop is lifted sufficiently above the general level to permit the use of its basement for closets, lavatories, &c. Lumber will all be stored in an outlying building at a distance to reduce fire risks, and will be delivered as required by means of the narrow gauge track heretofore described.

### Power Plant.

In the up river direction across the stockyard the power house is established in a central location. The motive power for the present will be derived from steam boilers, although gas engines have been considered and may possibly hereafter be adopted. Boilers at present to be installed are of the water tube type, provided with automatic stokers and convenient facilities for handling fuel and ashes. At this point will be located all the engines required for the various purposes, direct connected electric generators, air compressors, hydraulic pressure pumps and the pumps for the general water supply for the whole plant. River water will be drawn from wells located near the river's edge, which will be sunk into the gravel below the extreme water level, affording an ample supply of clean, filtered water. This water is discharged into a storage tank situated near the power house, thence distributed by the mains where required. In an emergency, such as an outbreak of fire, connection between the pumps and the tank can be closed, and the pumps are so designed as to deliver high pressure into the mains for fire service. The steam engines will all be of the compound type, designed to work under an initial pressure of 150 pounds and to operate condensing.

### Hydraulic Forge Shop.

Above the power house is situated the hydraulic forge for eye bars. This shop will shortly be in operation. It will contain two separate systems of hydraulic forging machinery, one set for finishing bars up to and including 8-inch widths. The other set will handle bars up to 16 inches in width, with heads 36 inches in diameter. The latter system, which is now nearly completed, will be the most powerful of its class in existence. The main upsetting machine will weigh 250 tons, almost entirely of steel, and will be capable of exerting an upsetting pressure on the eye bar of 1500 tons and a simultaneous vertical holding down pressure on the bar of 3000 tons. Hydraulic shears will be capable of cutting cold bars of 16 x 3 inches with a shearing pressure of 1000 tons, and the vertical punch capable of punching 14-inch holes through 3-inch material, hot, and exert-




THE NEW PITTSBURGH PLANT OF THE AMERICAN BRIDGE COMPANY.

ing a pressure of 1000 tons. Suitable rolling and straightening machines will be installed. Roller straightening is intended as far as possible to reduce the liability of injury to the bars. All the furnaces will be heated either by oil or natural gas. The annealing furnaces are designed for continuous production and will be so controlled as to heat the material to the desired refining temperature. All this hydraulic machinery, as also similar machinery in other parts of the establishment, will be supplied with fluid from the power house under a fixed pressure of 600 pounds per square inch, and each machine will be supplied with suitable intensifiers to elevate this initial pressure to whatever may be desired. In some cases this will be over 6000 pounds per square inch.

The eye bar shop will be traversed by electric traveling cranes for handling and distributing the material throughout the entire area of the shop.

The bending and forge shop is situated next to the stockyard and the line of the main bridge shop. This building contains the various forging tools of the establishment, as also an equipment of tools for bending and curving. Its situation is a convenient one for receiving its material from the stockyard and delivering it to the bridge shops. Immediately above the latter shop is located a building of similar design and dimensions to that just described, which contains all the machinery for producing the rivets, bolts and nuts of the establishment. It will have sufficient capacity to deliver about 1000 tons of rivets and bolts per month. This building will contain the stock of manufactured bolts and rivets, which can be readily transferred to any part of the plant by means of the narrow gauge service track. Still further up river, as described on the plan, are located the machine shop, pattern shop, iron foundry and testing laboratory.

The areas at the ends of these buildings, as also the shops contiguous to them, are covered by electric traveling cranes. These cranes are of the same span and hight as those which serve the bridge shops, and at the railroad end they terminate and connect with the same transferring gantry, so that cranes throughout the whole length of the works can be transferred from one runway to the other as desired.

In the shops the electric current from the central power station will be transformed by a multiple voltage system, so that currents of different potentials can be led to the tools and utilized for speed regulation. The motors on all principal tools will be directly attached to the tool, thus avoiding the interposition of belts and countershafts, leaving the overhead space all clear for handling appliances to serve the tools. The system of electric trolley service will be extended over the whole shop area, so that all tools where the magnitude of the work requires it will be served with power handling devices.

**The Machine Shop.**

The central avenue of the shop will be covered by a double system of runways one above the other, the lower runways carrying a clear span crane and those above carrying two shorter cranes; a longitudinal girder being provided in the center of the shop for supporting the interior ends of the latter cranes. This shop will be provided with a full complement of tools, among which will be several special machines for the convenient handling of turntables and bridge work.

The pattern shop, which will be situated between the machine shop and foundry, will be equipped with the most modern and convenient appliances for this branch of the business, and the building will have a basement similar to that previously described for the templet shop, containing closets and lavatory arrangements for the workmen in the neighboring shops.

**The Foundries.**

The iron foundry will be a building of the same dimensions and general style as the machine shop, containing the same general arrangement of longitudinal traveling cranes, but in addition thereto will be equipped with a system of traveling radial cranes for the convenience of individual operations. The cupolas will be served with convenient hoisting and charging machines for handling the stock, and natural gas will be used throughout the foundry for core baking and mold drying.

The steel foundry is not yet sufficiently developed to describe, but as the use of steel castings is rapidly extending, it will be necessary to have at least as large a foundry for these as for iron castings.

The testing laboratory, in addition to the minor machines for tensile tests of steel specimens, will contain an equipment for testing cement, concrete and other building materials, and also a powerful machine for testing to destruction the largest eye bars. It is contemplated to install in this department convenient appliances for the information of the inspection department, so that the influences to which material is subjected in heating or in other shop treatment may be observed.

As accessories to the plant but somewhat remote from the area for manufacturing there will be located suitable buildings for general storage supplies and to keep stores of lumber and patterns, erectors' tools and material at a reasonably safe distance from the manufacturing plant.

On the opposite side of the railroad from the works and about 20 feet above the railroad level is an extensive plateau which is well adapted by natural conditions for the residence district. This plateau extends several miles along the river, embracing the lands and village of the Harmony Society, and affords sufficient area for the comfortable reception of an extensive population. The main office of the establishment will be located on this upper level next to the railroad company's property and opposite to the center of the works, with which it will be connected by an over grade bridge for pedestrians; so that connection between the works and main office to the town can be maintained without crossing the railroad tracks at grade. This office is not yet completely designed, and a building for temporary office purposes is being fitted for immediate use. It is the intention, however, to plan this main office so as to afford the most convenient facilities and ample provisions for the officials of the manufacturing plant. The dimensions of the required office can be indicated from the estimate that the drawing room alone must be of sufficient area to accommodate about 500 draftsmen.

Ample land area is reserved for the manufacture of steel barges and similar river craft, which promises to be a large future industry.

The construction of these works is now proceeding and it is expected that the plant will be sufficiently advanced to permit manufacturing operations to begin during the coming year.

**An Incorrect Report Concerning Wages at Joliet.**—Chicago daily papers having published a statement on June 19 that a general advance in wages amounting to 10 per cent. had been made in the Joliet Works of the Illinois Steel Company, President E. J. Buffington issued the following correction: "Some time ago we decided to make an adjustment in the wages of certain employees at all works, which will result in an advance in the rates now paid in many of the departments. This will not be prejudicial to existing contracts with tonnage men and with men engaged on piece work, nor will such contracts be in any wise affected. The adjustment involves a considerable amount of work on account of treating individually the rate of each employee to be effected, and for this reason it is impossible to state the amount or rate of increase in the wages paid. It was hoped that the adjustment could be arranged so as to make announcement of it by June 1, but the work involved made this impossible; however, the adjustment will be made effective as of that date, so that those who are to receive an advance will be benefited to the same extent as if the announcement had been made June 1. Th adjustment is made voluntarily, and in recognition of the advanced cost of living."

The Mokta-el-Hadid Company of Algiers made a profit of 1,529,188.44 francs on sales of 598,301 tons of iron ore during the last fiscal year. The stockholders received 1,569,780 francs on a capital of 10,000,000 francs.

## Cores and Core Arbors.*

BY EDWARD B. GILMOUR, MILWAUKEE, WIS.

In the upbuilding of our language it has been customary to give names to the things pertaining to science and art, such that on hearing them mentioned a good idea of them is obtained, even though they have never been seen. Thus in foundry practice we ask what does a founder "found?" From this comes the subdivision into iron founder, brass founder, &c. Similarly the world "mold" conveys the idea of shaping something into a particular form as may be wanted. In speaking of cores one naturally recalls the well-known quotation from Shakespeare, "Give me the man that is not passion's slave, and I will wear him in my heart's core."

The core is a very important part of a mold, but in a great many cases is dismissed with the idea that all that is wanted is simply to ram sand in a box to the shape desired, and you have the core. This may be so, but unless the core is properly vented—that is, proper channels provided for the exit of the gases that are generated while casting—the result will be a bad casting. The gases will be forced through the surface of the core and blow the iron out of the mold. In many cases the core will go to pieces, and so you will readily see that core making plays a very important part in the production of good castings.

Cores are made in different ways and with various materials. The usual method is to dry them, for when a core is thoroughly dried there is less liability of anything going wrong. There are other cores that are used "green"—that is, not dried—and must be made of a different material from that used for the usual dried core. When a boy goes to work in the foundry for the first time he is taught the art of core making, beginning with very small cores, afterward branching out into the larger ones. This is the first work of molding, and all good molders are, as a rule, good core makers.

It is usually the practice to make a core box of the final shape desired, but in many instances guides or templets can be used to great advantage when only one core is required. All cores must have an arbor or rod. These arbors can be made exactly to fit the core in every particular. Take, for instance, the crown core of a marine cylinder, as represented in Fig. 1. The usual method is to use a portable spindle and a sweep which is made for the bottom part of the core. The thickness of the core is cut out of the sweep and fitted back with strips to hold it in place when the bottom part of the core is swept up. Or, as we might call it, the core box is made as you would build a regular loam mold, Fig. 2. The strips are then taken off, and molding sand is rammed into the core box and swept the shape of the top of the core. Now take a gate cutter or piece of tin plate, about 4 inches square, double over into a U-shape and use this to cut out the mold to the desired shape, afterward using a stamp in order to make the mold more regular. Also get a "dauber" and insert into the mold every 4 inches apart, and get strong paper, cut it into V-shaped strips to cover all over the mold. Fill the center in with sand up to 4 inches above the top, with the usual gates inserted in order to run it. Straighten over the top and put a flat plate of the size required on top of the sand, and bolt down to the bottom plate.

This is a very economical way of making difficult core arbors, and can be utilized for any strength required. When the casting is made these arbors can be very easily broken out, on cleaning, and the iron used again as scrap.

The same kind of an arbor can be used in a great variety of work, such as the port cores of marine cylinders, and the cores of locomotive cylinders. I have used them to advantage and with economy, and personally brought the cost of locomotive cylinder cores 25 per cent. below the usual method of loose rods, besides having a better and safer core. The method adopted was to make a rough wood templet in the shape of the core required, afterward to make a mold in the shape of the templet, then cut out and stamp the arbor to the strength required, cover the mold with paper and fill over with sand. In making core arbors on this system they can be of any desired shape, no matter how intricate they may be. It is sometimes very desirable to make cores in green sand, especially when castings are very thin, as in a great many instances it would be impossible to get the core taken out before the contraction of the casting had taken place. Cores made in green sand are soft and yield readily to the contraction.

Another great advantage derived from the use of those cores is that they are very easily taken out and you can use the same material over again.

I at one time had a number of castings to make of the following description: A shell 2 x 2 feet 6 inches by 4 feet long and ½ inch thick. It can readily be seen that to use a dried core for a casting of this kind would be folly, as the casting would be cooled and fully contracted before the core could be taken out. The following method was adopted: An arbor was made, as shown in Fig. 3. The end bars were made 1 inch deeper and were planed perfectly straight so that they rested upon the bottom of the core box. In the flask two bars were bolted the same distance apart as the bars on the arbor, so that when the core was placed in the mold the bars rested upon each other and made a very solid bearing. Holes were put in the lifting lugs in order to bolt the core to the bottom board, which had an iron strap screwed on the full breadth of the flask with holes right below the ones in the arbor. The object in having the bars planed off was that when the core was placed in the mold it would be perfectly square, as these bars in the flask rested upon the core prints of the pattern and an arbor of this design is so strong that it is impossible for it to twist in any way. If a green sand core should get twisted it is liable to crack, and should a crack occur in a core of this kind the casting would blow up when being cast.

In making a core of this kind it is good practice to put a sheet of newspaper on top of the cinders in order to keep down the pressure of the gases generated while casting. In making a green sand core of these dimensions there is a great pressure of gas inside of it, and unless great care is exercised in its production it is very liable to burst through the outer surface. The use of paper is suggested in order to keep down the pressure and expel the gas through the channels prepared for it.

Upon another occasion I found green sand cores of great advantage. We had to make a large number of columns, having an 8-inch square core running clear through them. These columns were 14 feet long, and we simply made a box grate, Fig. 4. For the vent we had 1-inch rods rammed in the ends of the grate. These rods were put in from each end right through the center of the core, as shown, the rods being about 1 inch apart at the center, the object being to allow the gas as it was generated to go freely off. If the rods were continuous, the gas as it was generated would travel back and forward until the pressure would become so great that when it was ignited it would explode and would in all probability shatter the core, making a defective casting. The object in making this core in green sand was that when the casting was to be cleaned it was simply lifted on end with the crane and struck a few blows with a sledge hammer. The core came running out, and the arbor was saved for the next one. Not only was there a saving in the cleaning of the casting but also in the material.

In foundries that have a large number of pipe connections to make, and which entail a great expense in pattern making, especially as in the majority of instances, these patterns may never be used again. The principle that was adopted was to make iron segments 3½ inches wide, the inside being the size of the core. A quantity of all sizes was kept in stock, so that whenever pipe was ordered there was always the size on hand that was needed. In order to get the required shape there was made a rough wooden templet of the size through the longitudinal section of the pipe. The first operation is to dig a hole in the floor in the shape of the templet, the segments and flanges are next put into the hole and the templet placed on top. The flanges and segments are arranged to the desired shape, the sand made up to the inside of the segments, which will be as a core box for

* Read at the meeting of the American Foundrymen's Association, Boston, June, 1902.

the pipe when completed. The core arbor is next placed inside of the mold and the green sand core rammed up right inside in its place. Now match the other half segments and flanges on top of the lower halves, so as to form the upper half of the core, but put the sand on the outside of the segments so as to form a pattern for the casting thereafter. Make the cope on top, and when completed lift off. Then take away the top segments and cut the thickness between the segments. Lift out the core by the three points marked on Fig. 5, cut out between segments in mold and finish as usual.

A core arbor made on this principle requires no anchor or chaplet below the core, but there must be one on top so as to hold the core in its proper place when the pressure is put on in casting. In setting the core arbor into the mold to make the core it is necessary to put a solid bearing below the three lifting points, so that when the core is put back into place there will be no danger of crushing the mold.

The cost of producing pipes by this method is as cheap as if there was a solid pattern, and there is a great saving of material. There is no limit to the size of pipes which can be made by this method.

Another way which is very convenient for making special pipe connections, which are considered small, is to make a gauge, as shown in Fig. 6; also a sweep, as in Fig. 7. Make two half cores, and when dried sweep the thickness on each half. In molding lay one half on the follow board, ram up, roll over, and place the other half core on top; make the cope, and when completed take the core out and send back to core room in order to have the two half cores pasted together.

In making cores for straight pipes, such as water pipes, they are usually made upon core bars, or spindles, as they are termed. Sometimes these bars are cast hollow, with holes dispersed all over them, in order to allow the gases to escape when casting. For small pipes, ranging from 3 to 4 inches in diameter, a round, solid bar is used with grooves or slots running from each end so as to serve for the air passages. These bars are usually revolved by power, the bars having trunnions on each end which fit into a bearing box. A cap fits over them so as to keep the trunnion in place when in motion. Hay ropes are wound around the bar, and afterward common black mud is swept over the ropes. This is termed the first coating. Thereafter the core runs upon a double rail into the drying oven and keeps revolving slowly through it to the opposite end. It is taken out by the man who puts on the finishing coat. He, in turn, rolls it upon the same double track into another oven and it follows the same process of drying. When completed it is taken out and gets a coat of blacking while it is still warm.

I might go on and give a great many methods of making cores and core arbors, but, the same in core making as in molding, one has to be guided by judgment, experience and circumstances as to what promises to be the best method to adopt. The number of castings required must also be considered, so as to be sure that, whatever method is adopted, it will pay. It is here that the specialist gets in his work and produces castings at phenomenally low costs. This can, however, only be done when quantity is one of the main factors.

The question is often asked, What size of outlet should be given in venting cores? The best practice is to get it as large as possible, for the larger the outlet the less liability for the passages getting closed. It has been maintained that an opening of ⅛ inch area is large enough for a cubic foot of core. I have in some instances had a smaller opening, proportional to the size of the core, for a vent passage, but it is not always good practice to have such small passages. When the outlets are very small it is not good policy to put many cinders into the cores, as the more cinders present in a core the more gas is generated. It is in cases of this description that the designers of castings can materially help to simplify work in the foundry, and if they were more conversant in foundry practice there would be more sympathy and respect for the molder, on account of the many difficulties he has to overcome.

*Fig. 1.—Core Arbor.*

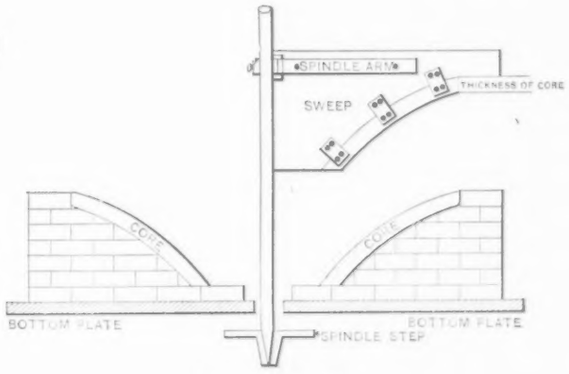



*Fig. 2.—Core Box.*

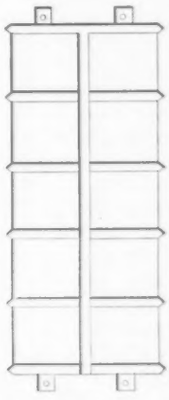


*Fig. 3.—Arbor.*

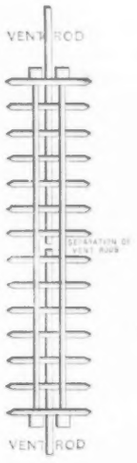



*Fig. 4.—Coring a Large Column.*

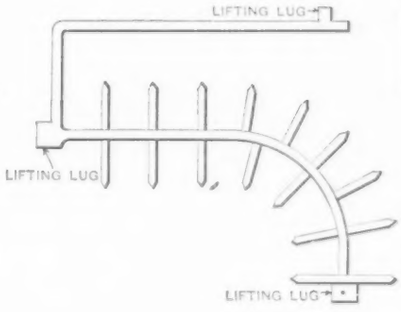



*Fig. 5.—Making Pipe Connections.*

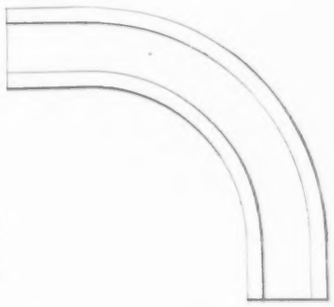


*Fig. 6.—Gauge for Small Pipe Connections.*


*Fig. 7.—Sweep for Small Pipe Connections.*

## CORES AND CORE ARBORS.

The kind of material most commonly used in venting cores is cinders. These are the best and the cheapest, and have a tendency to steady the pressure of the gas when generated, and allow it to pass off very easily. The arbors in the cores also make an excellent vent, for when the core is dried the heat in drying expands the rods and causes a continuous space throughout the whole core. In very sharp points in cores it is good practice to simply put plenty of rods without any vent passages whatever, as the rods will be sufficient and are more safe.

## Prospects of the Metric System Bill.

### It Will Not Become Law This Session.

WASHINGTON, D. C., June 17, 1902.—The advocates in Congress of the pending bill providing for the adoption of the metric system have determined to make a vigorous effort to pass the measure through the House before the adjournment of the present session, which it now seems probable will take place about July 1. Acting upon this decision, Chairman Southard of the Committee on Coinage, Weights and Measures has applied to Speaker Henderson and to Representatives Dalzell and Grosvenor, who constitute the majority of the House Committee on Rules, for a special order for the consideration of the bill. Speaker Henderson has given assurances that Mr. Southard's committee shall have at least one day for the discussion of measures reported by the committee, and as the metric bill is the most important one on the committee's docket, it is believed it will be considered before adjournment. Representative Dalzell of Pennsylvania, the senior member of the Committee on Rules, is in receipt of a number of memorials and letters from important iron and steel interests in his State urging the passage of the metric bill, and he is, therefore, disposed to further the measure in every way in his power. Representative Grosvenor, the remaining Republican member of the Rules Committee, is noncommittal, but is counted upon to vote with his colleagues for the special order. Chairman Southard has been overwhelmed with petitions, memorials and personal letters from all parts of the country urging the passage of the metric bill and emphasizing the importance of getting it through the House at least during the present session. He has been greatly impressed with this demonstration, and in speaking of the great interest which has been aroused in the subject, he said to the correspondent of *The Iron Age:*

"I have followed this subject for several years in Congress, but have never before seen so much interest manifested in the proposed change by business men. I was somewhat prepared for the manifestation of interest by the evidence given before our committee while the subject was being discussed, but it really seems to me that the subject is attracting much more attention among manufacturers and merchants than among scientists and educators, who heretofore have constituted the principal advocates of the metric system. We have received hundreds of personal letters from business men, not only in large cities, where the up to date manufacturer is obliged to keep up with the times in all matters, but in the smaller towns where the business man is naturally supposed to be absorbed with questions of local importance. To my mind, this is very significant not only with regard to the metric system, but as to the development in every day business methods throughout the country. We are getting to the point where it is just as necessary to save a dollar in the management of the business office as it is in securing the lowest possible cost of output, and the more enterprising manufacturers are systematizing their methods of doing business, introducing labor saving devices of all kinds, remodeling their bookkeeping methods and taking every step necessary to reduce the unit of cost. Under these circumstances, as was forcibly pointed out to our committee by several witnesses, the shrewd business man naturally turns to the metric system as affording a method of simplifying accounts which promises great economy and a high measure of accuracy, which has now become absolutely essential to all business transactions."

The action of the American Society of Mechanical Engineers with regard to the metric system, which was fully reported in *The Iron Age* of June 5, has greatly encouraged the members of the House committee and has decidedly improved the prospect for the passage of the metric system bill. The activity of certain members of the society, who came to Washington to present views in opposition to the bill when in committee, had a decidedly depressing effect upon the proposition owing to the high standing of the society and its unquestioned representative character. Although the personal bias of the members of the committee was well-known, it was assumed that their action was not without full authority, and the resolutions adopted by the society disavowing the action of these individuals and discharging the "metric opposition committee" has been very gratifying to the advocates of the pending bill.

It is not the present purpose of the friends of the metric system bill to attempt to pass it in the Senate during the present session, should they succeed in putting it through the House. The Senate is so fully occupied with other important measures that it is not regarded as expedient to push the bill until next December, but in the meantime pressure for its passage will be concentrated upon the Upper House. The friends of the bill are much encouraged by the fact that the Senate recently appointed a special Committee on Standards, Weights and Measures, to which the metric bill will be referred instead of sending it to the Committee on Finance, where it would otherwise have gone. The special committee is made up of Senators Kittredge of South Dakota, Simon of Oregon, Dolliver of Iowa, Clark of Montana and Carmack of Tennessee. These are all men of affairs who have traveled much abroad, and who have been brought in contact with the practical operation of the metric system in other countries. Senator Clark of Montana has lived in France for considerable periods, and is an expert in the use of the system. The committee has agreed to give hearings on the bill, which will begin with the opening of the next session, and a dozen prominent manufacturers and business men have already promised to appear and talk for the metric bill.

W. L. C.

## A British Optimist.

The principal topic of discussion which came up before the recent meeting of the British Iron Trade Association was the report of the American Industrial Commission, of which Ebenezer Parkes, M.P., Axel Sahlin, Enoch James and J. S. Jeans were members. In the discussion H. J. Skelton made the following breezy remarks:

It seems to me that this association ought to impress upon those who are engaged in the iron and steel trade generally in Great Britain that these American figures (of production and capacity) are not alarming but rather encouraging in this sense, that they confirm a conviction which I have had in my mind from personal experience for several years past now, that we are only at the beginning of something like a very large, and general, and continued consumption of iron and steel all over the world. I lay down as a proposition that as civilization advances there will be such an increase of the daily requirements of the human race that the consumption of iron and steel in all shapes will be very large indeed. If, therefore, the bright, brainy Americans are so encouraged to provide for the present and the future of this large development, I say it ought to be a great encouragement to us at home here to also provide for the coming continued increase of consumption of iron and steel. I am sorry to express openly my conviction that we here seem to alternate between an unnecessary pessimism and an unnecessary optimism. Those of us, who, like myself, may almost be said to be international in dealing with iron and steel, because we are not confined solely to British products, know perfectly well that there is a certain trend, a movement common all over the world at the present time, whether it be America, Germany, Austro-Hungary, Belgium or France, in the direction of greater economy of production. There is a tearing out of all old plant, a preparing of bigger interests and bigger things generally. We, in this coun-

try, have had our interests, whatever may be the reason, too narrowed. We have hesitated to tear up old plant and to read the new signs of the times, and to provide for the good trade in front of us, not under the old conditions. We must take notice that after every boom there is a reaction, and that the current of trade is never precisely the same as before. Therefore, we may say to those who provide capital, "It is perfectly true, though you were established 30 or 40 or 50 years ago, you have ceased to have any justification for your existence;" yet for those who are sufficiently courageous to take advantage of modern discoveries and modern inventions and modern improvements, and to put down modern efficient works, there is a certainty of reward for the next 20 years in the British iron and steel trade better than can be got in any other trade. Therefore we need feel no alarm, for I consider that these are encouraging figures.

## A Shearing Machine for Steel Blooms.

The *Engineer* describes a shearing machine built by Joshua Buckton & Co. of Leeds which will cut steel blooms of a tensile strength of 40 tons to the inch, cold, up to 6 inches square. The anvil of the machine, which carries the fixed knife, is bolted through to the main body by four hammered steel bolts. The anvil is formed with a perfectly open jaw, so that as the pieces are cut they are pushed through the jaw of the machine indefinitely, and under no circumstances can they choke the machine. The machine is driven by a 40 horsepower electric motor, driving two belts onto the fly wheel rims. The fly wheels are paired, and balance each other across the machine. The main driving wheels are also paired. The eccentric shaft drives the slide which carries the moving knife through an arm, which can be lifted out of gear to stop the cutting action until the bloom is in correct position. The fly wheels have split bosses and are gripped upon a hob; the hob is keyed fast upon the shaft with sunk keys, but the fly wheels drive through friction only, so that if too large a bloom were put into the knives the fly wheels would surge, and the machine would refuse to cut before anything was broken. The arms of the main wheels are made of H section, with the flanges disposed in the direction which gives each arm the greatest strength as a cantilever. The teeth of the wheels are wider than usual, but are beveled off at the outside. Thus the working portion of the teeth is given the same support that it would receive from shrouding, but enabling the gearing to be examined through and through, which cannot be done if shrouding is employed, and which is particularly important in the case of paired wheels, as they can be of no benefit unless the teeth are bearing equally in both wheels.

**A New Pipe Plant.**—The T. A. Gillespie Company are erecting at Paterson, N. J., a new pipe plant, the principal building of which measures 150 x 300 feet. They will manufacture the Ferguson lock joint pipe, which first became prominent in the construction of the West Australia water system for supplying the Coolgardie gold fields. This pipe is particularly applicable for high pressures and will be made in sizes from 20 inches in diameter up. It is expected that the new works will be in operation early in the fall.

## An English Multiple Spindle Drilling Machine.

The following description of a machine for drilling the longitudinal seams and ends of locomotive boiler plates 18 feet long, also fire box plates, &c., is from the *Engineer*. The machine was built by Craven Brothers, Manchester, and is in use at the Sydney works of the New South Wales Government railways. The cross slide for drilling the longitudinal seam is fitted with 22 spindles, and that of the machine for drilling the ends with ten spindles. The spindles for drilling the longitudinal seams are adjustable from 3 11-16 to 4½ inches apart, and those for the ends from 3 11-16 to 6 inches apart. The spindles are steel, 1¾ inches diameter in the bearings, and 2¼ inches at the ends, with conical holes for twist drills. Each spindle is balanced and has self acting feed 6 inches deep. The feed to each spindle can be released separately, and each spindle can be raised or lowered independently by a handle in front of each head, or all the spindles can be raised or lowered collectively by means of the long upright levers. The construction of the heads is shown clearly in Fig. 2. The spindles are driven by steel screws coupled direct to electric motors. The cross slides are supported by strong standards, and the machine is provided with a moving table, 19 feet long, carried on axles and wheels running on two planed girders, traversed by a cross handle and gearing, as shown. The inside flange of the table is provided with a T-bolt slot and dividing peg to fix the table. The cross slide for drilling the ends of plates is fitted with a slide, to which the drill head stocks are bolted, and when ten holes are drilled this slide is traversed along the cross slide by a screw and dividing arrangement to drill other holes at the required centers. The machine is provided with rotary pumps and pipes to play lubricant on the drills when working.

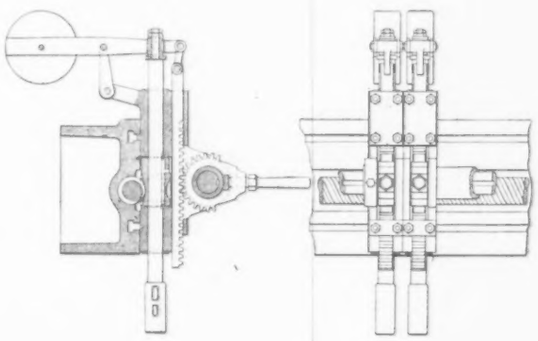
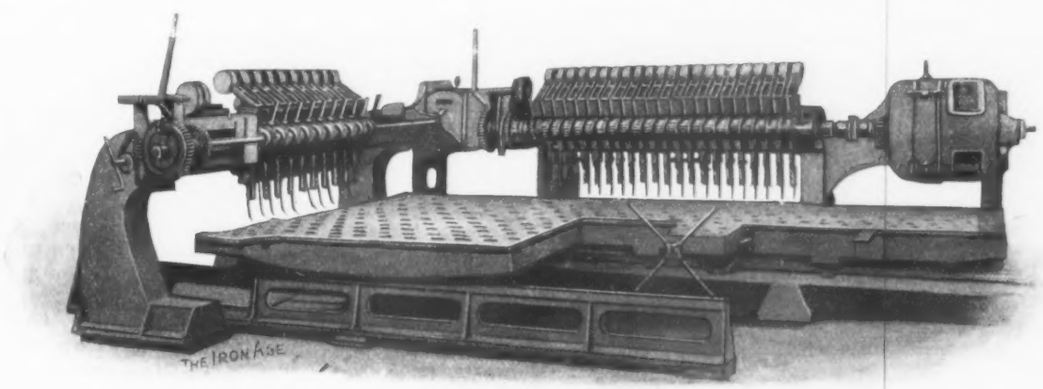


*Fig. 2.—Details of Spindle Drive.*




AN ENGLISH MULTIPLE SPINDLE DRILLING MACHINE.

# American Foundrymen's Association.

*(Concluded.)*

The report published last week brought down the proceedings of the convention of the American Foundrymen's Association at Boston to Wednesday noon. The afternoon of that day was devoted to a drive to Watertown, Mass. Quite a cavalcade started from the Hotel Brunswick shortly after 1 o'clock, consisting of 24 carriages and 18 drags, occupied by 200 foundrymen and ladies. The route lay through the Metropolitan Park system and over fine rural roads winding through charming scenery. Arriving at Watertown, the first stop was made at the United States Arsenal. A hurried visit was paid to the foundry and machine shops, in which a great deal of heavy work was observed in progress. In the foundry a 20-ton casting for a disappearing gun carriage had just been taken from the sand and was about to be moved by an electric traveling crane, whose runway enabled it to cover the entire molding shop. Huge lathes, planers and boring mills were busy in the machine shops on parts of guns and gun carriages. As many of the party had never seen work of this precise character, they were greatly interested.

### The Walker & Pratt Stove Foundry.

The stove factory of the Walker & Pratt Mfg. Company, also at Watertown, was the objective point of the excursion, and on arriving there the visitors were first conducted through the works. Many of them were somewhat familiar with the leading features of this model plant, which had formed the subject of an illustrated lecture by President A. W. Walker of the Walker & Pratt Company at the Pittsburgh meeting of the association in 1900. Nevertheless, they as well as others were greatly pleased to have an opportunity of going through it. The arrangements for the reception of the visitors were very systematic. Each was furnished with a neat pamphlet giving the more important details regarding the works and a ground plan of the buildings. A route was laid out through the works, and indicated by trim-looking, white gloved boys placed at the various turns. The course was through the office, sample room, mounting department, mill room, pattern building, foundry, core room, lavatory, stock room, power house and warehouse, to the place of beginning, comprising more than ½ mile.

While everything was interesting, by reason of orderly arrangement and scrupulous neatness, the foundry and its appurtenances were especially attractive to the visitors. The foundry has cement or granolithic passageways, which are always clean. The ladles containing the molten iron for pouring are conveyed from the cupola to the various floors by trolleys running on an overhead track, hung from the roof trusses. The lavatory for the men could hardly be finer if intended for the officers. All the appliances are such as to inculcate cleanliness. The wash basins are of marble with mirrors over them, and 100 separate bathing rooms are provided in which the men can bathe themselves before leaving the works. Everywhere through the factory indications of thoughtfulness for the comfort of the men were to be seen. For instance, a coffee room is conveniently located in a portion of the factory, in which the workmen are furnished with coffee at the nominal charge of 3 cents a cup, or 13 cups for 25 cents.

The dimensions of the principal buildings are as follows: Molding shop, 122 x 215 feet; molders' lavatory, 36 x 105 feet; manufacturing building, 112 x 282 feet; warehouse, 152 x 182 feet; pattern building, 60 x 300 feet. The works are located on a branch of the Boston & Maine Railroad, giving them the best railroad facilities. They manufacture ranges, stoves and boilers for steam and hot water heating.

After the visitors had been escorted through the factory they were taken to a tent, which had been erected on the lawn, and served with a dainty collation. All the details connected with the reception of the visitors showed the utmost thoughtfulness on the part of the representatives of the company. An instance of this is observed in the fact that the services of a physician and surgeon had been secured, so that in case an accident had happened to any of the party skilled attention could have been given at once. The excursionists left the ground at 5 o'clock, greatly pleased with what they had seen, and unquestionably with a very high admiration for the products of the company.

### Evening Entertainment.

The evening was given over to a vaudeville and smoker at Copley Hall. The arrangements here were of a character to please the most fastidious. A feature of the entertainment was the presentation to each guest of a typical stein, suitably inscribed to commemorate the occasion.

## THURSDAY'S PROCEEDINGS.

Thursday was devoted almost entirely to a steamboat trip around the beautiful harbor of Boston, with a shore dinner at Nantasket Beach. The famous Salem Cadet Band accompanied the excursionists and contributed greatly to the enjoyment of the occasion.

The final business session was held Thursday evening in one of the halls of the Institute of Technology. The vice-president for Canada, Thomas J. Best of Montreal, was selected to fill the chair. The report of the Committee on Nominations of Officers was presented by the chairman, Wm. Yagle of Pittsburgh, as follows:

President, A. W. Walker, Walker & Pratt Mfg. Company, Boston.

Secretary, Dr. Richard Moldenke, New York.

Treasurer, Willis Brown, Walker Foundry Company, Erie, Pa.

Vice-Presidents.—First district, New England States, J. F. Lanigan, Davis Foundry Company, Lawrence, Mass. Second district, New York and New Jersey, J. A. Becket, Hoosick Falls, N. Y. Third district, Pennsylvania, Delaware, Maryland and District of Columbia, F. H. Zimmers, Union Foundry & Machine Company, Pittsburgh, Pa. Fourth district, Michigan, Ohio, Kentucky and Tennessee, A. I. Findley, *Iron Trade Review*, Cleveland, Ohio. Fifth district, Indiana, Illinois, Missouri, Kansas, Colorado, New Mexico, Utah, Arizona, Nevada and California, C. J. Wolff, L. Wolff Mfg. Company, Chicago. Sixth district, Wisconsin, Minnesota, Iowa, North Dakota, South Dakota, Idaho, Nebraska, Montana, Wyoming, Washington and Oregon, Adam W. Bair, Milwaukee, Wis. Seventh district, Southern States, J. P. Golden, Golden's Foundry & Machine Company, Columbus, Ga. Eighth district, Canada, T. J. Best, Montreal.

The report was received and all were unanimously elected. Mr. Walker, the new president, made a short speech expressing his thanks for the evidence of appreciation thus manifested, saying among other things that it was especially pleasant that in the same room in which years ago he received his first instruction in physics he now received this honor.

Resolutions of thanks were adopted to the New England foundrymen for their bounteous hospitality, to those who had prepared papers, to the Walker & Pratt Mfg. Company and to the Institute of Technology.

Secretary Moldenke announced that pressing invitations had been received from Milwaukee to hold the next annual convention in that city and from St. Louis for the following year. These matters were referred to the Executive Committee.

E. M. Loudon and Henry Hansen, both of Detroit, addressed the convention in behalf of the Foundry Foremen's Association, requesting the adoption of a plan by which it might be affiliated with the American Foundrymen's Association. It had been started in Detroit some 15 months since for the benefit of foundry foremen through the interchange of ideas and experiences. The Executive Committee were authorized to confer with a committee from the foremen's organization and given power to act.

R. F. Flinterman of Chicago discussed the desirability of forming a section of the association for the discussion of purely scientific subjects connected with foundry work, suggesting that those interested could hold their meetings an hour earlier than the regular sessions. He moved that a committee be appointed to secure papers to be read in a chemical section arranged on this plan. The motion was adopted, and he was ap-

pointed chairman with the privilege of naming his own associates.

**Advance Made in Foundry Practice.**

A. W. Slocum of Pittsburgh addressed the chair, stating that he had been requested to reply to those who were in the habit of asserting that foundry practice had made no progress in the last 40 or 50 years. He proceeded to take up a number of details of the foundry business to show that great progress had been made. He asserted that if any one will say that brass castings were made 30 or 40 years ago as well as they now are it would be taken as a joke and not seriously. A glowing tribute was paid to the progressiveness of pipe founders. The requirements as to car wheels had been increased 250 per cent., which, of course, meant better methods for producing them. In radiators the modern product is of one-half the weight at one-fourth the price and is more artistic. Even in general jobbing work any foundryman who had been in business 50 years who would admit he had made no progress in that time would thus acknowledge his unfitness to act even as a foreman. W. W. Lobdell of Wilmington, Del., arose to support the statement made by Mr. Slocum, saying that no man connected with the foundry trade could hardly be so foolish as to admit that no progress had been made in this branch of trade in the past 30 or 40 years. He also gave examples to show what had been done in some branches of the foundry business and particularly in introducing better methods of casting chilled rolls. As the discussion of this subject bid fair to consume considerable time, a resolution was offered by Thomas D. West, which was adopted, to the effect that foundry practice has made great progress in the last 30 years, and that any one who states that no progress has been made does not voice the opinion of this association.

Herbert E. Field, Ansonia, Conn., presented his paper on the "Metallurgy of the Cupola," calling attention to the principal points but not reading the entire paper, for the purpose of economizing time.

In the same manner, S. H. Stupakoff of Pittsburgh, Pa., presented the leading features of his two papers on "The Molding Machine." He said that molding machines are always limited to a certain kind of castings and to certain sizes and flasks, but if a jobbing foundryman had the means of placing a pattern on a machine quickly, say in 20 minutes, a molding machine could be used to great advantage, even in a jobbing foundry in which only a few castings are needed of a particular pattern. This is effected by jigs or transfer plates, the use of which, however, requires a good mechanic and therefore cannot be intrusted to an ordinary unskilled workman.

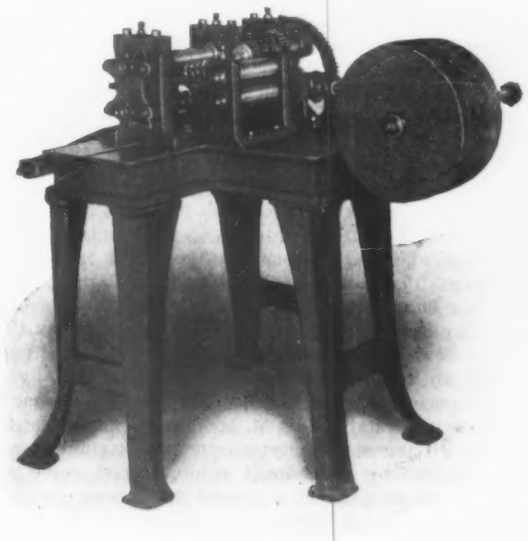
**Lecture by Albert Sauveur.**

Albert Sauveur of the Boston Testing Laboratory delivered a most interesting lecture on the "Application of Metallography in Foundry Work." He said that foundrymen usually oppose excursions of steel men into the investigation of the properties of cast iron. He claimed that this, however, was necessary, as a very close relation exists between cast iron and steel, which he proceeded to demonstrate. If all the graphitic carbon is removed from cast iron a mass of soft steel remains. A knowledge of steel necessarily implies a knowledge of the matrix of cast iron. He used the term "matrix" as applied to the graphitic carbon and other component parts which surround the particles of pure iron in a mass of cast iron, stating that the difference in the matrix constituted the difference between steel and cast iron. Mr. Sauveur exhibited a number of diagrams, showing the structure of steel and cast iron as brought out under a microscope. These diagrams respectively showed pure iron, wrought iron across the section, wrought iron in the direction of rolling, soft steel containing 0.10 per cent. carbon, steel of 0.30 to 0.35 per cent. carbon, steel of 0.40 to 0.45 per cent. carbon, steel of 0.80 per cent. carbon, gray cast iron having plates of graphite with 0.40 per cent. carbon, mottled cast iron and white cast iron. The illustrations showed the close analogy between steel and cast iron. He claimed that it was improper to look on cast iron as a subject more complex than steel, as this discourages research and injures progress. If it was desired to secure an iron with as much strength as possible an iron must be produced with a matrix of greatest strength. Graphitic carbon does not add to the strength of the iron, but weakens it, and therefore it should have as little graphitic carbon present as possible. This can most easily be decreased in an air furnace, which consequently produces a casting of the greatest strength. Mr. Sauveur closed his lecture by using an electric microscope of high power which made projections on a screen directly from iron and steel specimens, mounted for the purpose. In this manner he showed the greatly magnified surfaces of specimens of steel, pig iron and spiegeleisen. The lecturer received hearty applause from his auditors and also a formal vote of thanks.

Announcement was made that no further business would be presented, and the convention adjourned *sine die*.

## A Gang Slitting Machine with Flattening Rolls and Winder.

To meet the demand for a gang slitting machine so arranged that the slitted metal shall leave the machine with each strip coiled separately and without any burr



GANG SLITTING MACHINE WITH FLATTENING ROLLS AND WINDER.

on the edges, Blake & Johnson of Waterbury, Conn., have designed the machine here illustrated. It is provided with a pair of hardened steel rolls, placed directly behind the cutting arbors, for rolling down the burrs. Behind the rolls is a winder shaft, which may be driven by an intermediate shaft and bevel gears, or by a belt from the main cutter arbor. The arbors are of hammered steel 2 inches in diameter, and in their ends are inserted hardened steel thrust bearings which run against the ends of hardened steel screws. The frame supporting the outer ends of the arbors is adjustable on the bed, and by loosening the clamp screws can be moved on the bed to allow the cutter to be removed or changed without disturbing the arbors. The cutters are 4½ inches in diameter. The machine will take a sheet 7 inches wide and of any thickness up to No. 17 Stubs gauge.

The Chicago House Wrecking Company, the company that are tearing down the buildings of the Pan-American Exposition, state that within 60 days the exposition will live only in memory; that by that time all the buildings will have been obliterated. So far the Government, the Agricultural, the Manufactures and the Horticultural buildings are practically demolished, and men are working on the Machinery Building and the Electric Tower. The Goddess of Light is to come down

from the tower within a week, as the purchasers are anxious to get her to grace a popcorn stand in Cleveland, Ohio.

## Lake Iron Ore Matters.

### Disappointing Explorations.

DULUTH, MINN., June 22, 1902.—It is useless to deny that there is considerable disappointment over the results of exploration on the west end of the Mesaba range, but this fact is in line with the tone of this correspondence for months. Because of the find of the Hawkins mine in section 32, T. 57, R. 22, made last year, and its sale at a large price to the Deering Harvester Company, very heavy explorations have been carried on to the extreme west, between R. 22 and R. 25, where flows the Mississippi River. An option on the Arcturus mine, taken after what seemed like the successful washing of its ore, and at a price out of all reason, aided in the excitement, and scores of explorers went in. Camps are in operation all along the range from the Hawkins to the Mississippi River, and many drills are at work. The news now comes that the option on the Arcturus, which was for $750,000, has been abandoned before any additional washing experiments have been undertaken. The exploitation by the option holders is stopped and it is claimed that the property will be returned to its former option holders. It is now said that the 12,000,000 tons that were alleged to have been shown there by early explorations is not in sight, nor can the 5,000,000 tons additional found by a Cleveland company later be seen on careful search. The Union Steel Company, who took an option on the southest quarter of the northeast quarter of section 21, T. 57, R. 24, known as the Holman 40, are not at all sure, it is stated here, to take the property. If both this and the Arcturus are abandoned the west end will receive a pretty severe blow. Close to the Holman drill explorations are in progress on the Diamond, bought some time ago at a low price by the Oliver Iron Mining Company. The Mesaba Chief, which lies 10 miles northeast, but is regarded as a west end property, is being again explored, this time by the Eastern Railway Company. It has previously been explored four times—namely, by the original lessees from the State, by the Lake Superior Consolidated Mines, by E. J. Longyear for Southern interests, and by M. L. Fay, the latter last fall, and by all unsuccessfully except the original lessees. They found, or were claimed to have found, some good ore, and all subsequent explorers have been trying to locate this same ore body.

The Cleveland Cliffs Iron Company have now taken up Mesaba explorations. They have some west end properties secured from the Eastern Railway Company, and a State tract just west of the Eveleth group, on which several previous explorers have easily succeeded in locating the black slates. Whether the new people will be more successful remains to be seen.

### Heavy Stripping to Be Done.

At the new Croxton mine, being opened by Joseph Selwood on the east side of T. 58, R. 20, they will strip overburden to the thickness of 70 feet. While stripping as deep as this has been done on the Mesaba in several instances, it has not usually been intended, and in the early days of the range proved disastrous to experimenters. Now the conditions are different, however. A stripping contract amounting to 1,000,000 cubic yards and covering a period of four years has been entered into by the new Wallace Contracting Company of Duluth for taking off overburden from the Kinney mine of the Republic Iron & Steel Company in section 14, T. 58, R. 19. Another contract of the same size is in progress at the Burt mine of the Minnesota Iron Company, though the amount so far actually let is only half that. Heavy stripping is also under way at this time at the Stephens mine of the Minnesota Iron Company, at the new Jordan and the Morrow, Stevenson, Pitt, Fayal, and the Biwabik. Superintendent J. D. Schilling, for eight years in charge of the Biwabik mine, has resigned to take the management of the Cornwall ore mines, Pennsylvania, and is already there. He has been most successful on the Mesaba in handling a property that in some ways resembles the Cornwall ore hills.

### The Menominee Range.

The Oliver Iron Mining Company have cut down their force at the Michigan mine, Menominee Range, and will do nothing there this year. The mine was expected to be a considerable producer. At other mines of the range there is little change in the appearance of things. and shipments are going down as fast as ever, if not a little faster.

### The Marquette Range.

On the Marquette Range the Negaunee mine has notably recovered from its disastrous experiences of last winter. The mine is now solid and the half acre at the bottom of the fatal cave of January 7 has become a saucer shaped depression, firm and tight. For two months reopening the wrecked portions of the mine has been under way, and an enormous amount of work has been done. A vast quantity of rock and wreckage, timbers, clay and sand has been hoisted. This work is about over and ore will be reached in a few days, probably next week. The work that has been done in the past 60 days has been marvelous indeed, and has shown the capacity of the management most splendidly. The mine will be pushed to the limit for the coming year, and men will be added as room is made for them. Now 500 men are at work.

The Cliffs shaft on the Maas property at Negaunee is sinking through the sand very slowly, but it is steady progress, perhaps 4 to 5 inches daily. It is now down 130 feet. Nearly 1500 gallons of sand and water are pumped each minute, and 10 men are constantly employed in shoveling the pumped sand away from the launder. The shaft is weighted, aside from its own great bulk of timbers and machinery, by hundreds of tons of pig iron piled up on the inside. Occasional seams of clay are cut, but they have little thickness. It is hoped that the ledge will be reached soon, for a hung shaft would be a calamity, and might be the situation at any time.

### The Vermillion Range.

Other wealthy Duluthians have become interested with Alfred Merritt in his Pine Island exploration on the Vermillion Range, but nothing has yet been done to actually prove the property. The Woodbridge exploration at the McComber mine has been taken over by one of the leading steel making companies, and with favorable indications for an ore body. Other work is under way in the same township, but with less satffactory showings. But ore has been found by very deep drillings between the Pioneer mine and Long Lake, on land belonging to Conan of Milwaukee, under circumstances that favor a good find. The diorite capping is more than 1000 feet thick. This is similar to drill holes made some years ago by the Oliver Iron Mining Company south of their Savoy mine, at Ely, where ore was cut under 1300 feet of diorite. It takes not only cash but ability, confidence and sand to explore for ore under such circumstances.

### The Copper District.

On the old Franklin Mining Company stamp sands in the copper district the Lake Superior Concentrating Company two years ago made some experiments in rewashing and jigging and closed contracts to treat these sands for the copper remaining therein. The company have been at work some time and are now about to enlarge their capacity. It is said their weekly shipments of copper mineral are as large as those from some of the successful mines of the district. These sands are reported to hold about 0.50 per cent. copper, and to give nearly that much in the processes employed at these works, nearly as high a percentage as the Atlantic mine gets from its rock. The South Range mines, Baltic, Trimountain and Champion, are steadily increasing their production; Baltic has just completed a new hoisting plant that will add much to its output. The north group, Wolverine and Mohawk, are increasing. The Ontonagon mines, Mass, Michigan and Adventure, are improving. All through the district the situation is much better than a short time ago. Copper country people expect a 14-cent copper market shortly, figuring on the increased consumption and the enlarged exports shown by statisticians.

D. E. W.

## Washington News.

### The Eight-Hour Bill.

WASHINGTON, D. C., June 24, 1902.—The Senate Committee on Education and Labor has practically decided not to report the pending eight-hour bill to the Senate at the present session. It is now expected that Congress will adjourn within the next fortnight, and as the committee has outlined considerable evidence and has also promised both sides as much time as they may require for the general arguments upon the measure, it will be practically impossible to complete the hearings before the end of the session.

A feature of the latest meeting of the committee to consider the pending bill was the decision to investigate as a collateral issue the charges that the Bethlehem Steel Company, the Cramp Shipbuilding Company and other concerns have discharged employees because of efforts made by the latter in behalf of the pending bill or in connection with other movements for a shorter work day. William Robertson of Allentown, Pa., testified that he was dismissed on March 12 last from his place at the Bethlehem Steel Works, on the ground that the company were "slack of orders;" but he alleged that the works were then being run overtime and Sundays, and that after his discharge the company advertised for men. The day he was discharged he had attended a meeting for the purpose of organizing men in the steel molding department. Thomas H. Flynn of Pittsburgh, Pa., then read to the committee a report which he had prepared at the request of President Gompers covering an investigation of the charge that the Bethlehem Steel Company had dismissed 37 men for attending a meeting at South Bethlehem. This report was made up almost entirely of hearsay statements from employees or their friends, usually to the effect that they had attended mass meetings addressed by labor leaders and were subsequently discharged. In no case was the attendance upon the meeting given by the representative of the company as the reason for their discharge.

Thomas F. Tracey then testified that at the instance of Mr. Gompers he visited Philadelphia a few days ago to obtain statements from men who were formerly in the employ of the Cramp Shipbuilding Company, but who were discharged, it was alleged, because of their efforts looking to a shorter work day. He presented written statements from a number of men who, in almost every case, asserted that they had been discharged for joining a union, although in no case did they present other evidence as to the cause of their discharge. This witness also stated that he had made inquiries of some of the employees of the Cramp Shipbuilding Company to ascertain if they were favorable to an eight-hour day, and also whether they were compelled to work overtime and Sundays without regard to their desires in the matter. The general character of this witness's testimony may be gathered from the following extract: "I asked them if the firm compelled them to work on Sunday. They said: 'No, the firm does not compel us to work on Sunday; but any man who is asked to work on Sunday, or any man who is asked to work overtime, and refuses, usually finds that a day or two afterward he loses his job.' So that the men, instead of refusing to work on Sunday and losing their jobs, are compelled to work on Sunday. I asked several of the men if they were not anxious for a reduction in their hours of labor, and they said they would welcome it. I asked them further if they would make a statement to that effect in writing. They said that, while they would welcome any reduction in their hours of labor, it would be impossible for them to make a statement in writing to that effect, for if they did there was no question at all that just as soon as the information came to the officials of the company they would lose their employment." In reply to a question by Mr. Hayden, one of the attorneys for the Bethlehem Steel Company, the witness said he could not furnish any of the names of the employees of the Cramp Company with whom he talked, as they were unwilling to make a written statement and were entire strangers to him.

### The Lovering Drawback Bill.

The Secretary of the Treasury, after an exhaustive investigation of the operation of the present drawback law and a careful analysis of the Lovering bill designed to liberalize drawback methods, has addressed a letter to the chairman of the Ways and Means Committee, in which he strongly indorses the proposed measure, and intimates that its enactment is a necessity in order to enable American manufacturers to market their surplus products in competition with countries in which raw materials are either free or eligible to drawback of duty under laws far more favorable to the producer than the drawback statutes of the United States.

The position of the Secretary of the Treasury may be outlined in a few words. The high protective tariff maintained in the United States has so stimulated leading industries of the country that they are now in position to produce a very large surplus, the marketing of which is necessary in order to keep the unit of cost at a low figure. To sell these products abroad, however, it is necessary to meet the competition of manufacturers in free trade countries or in countries having drawback laws as liberal as that of the French system. Unless American manufacturers can be put on an equal footing with other manufacturers they must either enter into ruinous competition with each other in the domestic market or they must limit their own production, which would mean the stoppage of their plants for a portion of each year, the material reduction of the annual earnings of their employees and the increased cost of their output. In the Secretary's opinion the drawback law is the safety valve of our high tariff, and should operate with the least possible friction, and in such a way as to enable any manufacturer conducting a legitimate business to take advantage of it.

The indorsement of the Lovering bill by Secretary Shaw has reached the committee at so late a date, however, that it is doubtful if anything will be done with the measure at the present session. Those who argue for a prompt report upon the bill base their view upon what they believe to be the certainty that some step will be taken at the next session of Congress looking to tariff revision, either by independent measures reducing the duties no longer needed or by a general bill readjusting the schedules. There is unquestionably a feeling among Western Senators and Representatives that some action on the tariff should be taken at once, and this feeling is reflected in the suggestion that the Lovering bill be reported as an evidence of the purpose of the Ways and Means Committee to remove tariff barriers on our export trade, at least.

In this connection it should be said that the strongest advocates of the Lovering bill deprecate the suggestion that it should be regarded as any part of a general plan of tariff reduction, and one of the strongest arguments urged in its behalf is that it will relieve the pressure for lower duties on raw materials and thereby postpone the general revision of the tariff.

The discussion of the Lovering bill continues to bring communications to Senators and Representatives from manufacturers in all lines of industry and in all parts of the country. One of the points most frequently made by these manufacturers is the great desirability of that feature of the Lovering bill commonly referred to as "substitution," which in emergencies will permit manufacturers to export with benefit of drawback goods made of domestic materials, provided an equal quantity of foreign materials has been imported or purchased.

One highly important result will follow the recommendation of Secretary Shaw in favor of the Lovering bill. The evidence given before the Ways and Means Committee by certain special agents who appeared before the committee created the impression that the Treasury Department was opposed to the liberalizing of the drawback law, and many customs officials have assumed that this adverse testimony reflected the views of the Secretary of the Treasury. This impression is now found to be erroneous, and the fact that the Secretary in an official communication has expressed his conviction that the law should be amended cannot fail to result in the most liberal construction of the present statute by subordinate officials having to do with draw-

back matters. This new tendency is already apparent, and its development hereafter promises to be of great advantage to exporting manufacturers. W. L. C.

## Shop Tools and Rigs.*

BY JAMES A. MURPHY, ERIE, PA.

Among the greatest economizers in our modern shops are properly designed tools and rigs, and not enough attention is usually paid to this end of the business. I do not mean to speak of such special foundry machinery as is usually procured from foundry supply houses, but those indispensable tools of our own "get up" for lifting and conveying our molds and material and the rigs we use for making our molds in sand and loam.

Aside from first-class management, the design and equipment of a shop is the greatest factor in cheap


*Fig. 1.—Lifting Chain.*

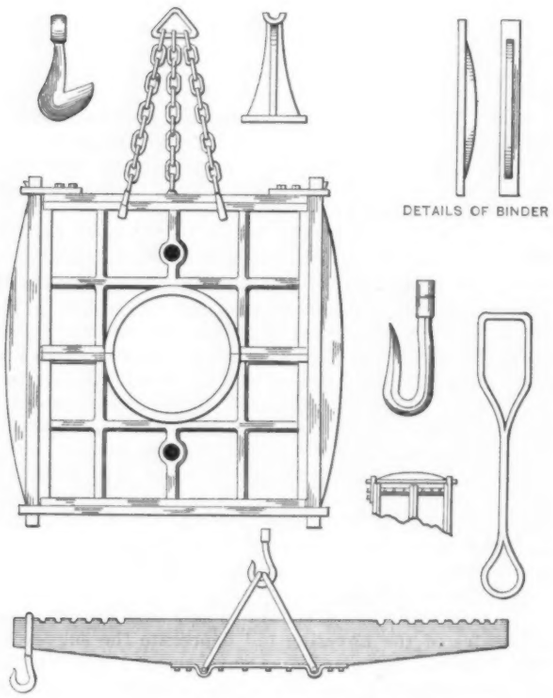



*Fig. 2.—Method of Handling a Cylinder Flask.*

SHOP TOOLS AND RIGS.

production. No shop with pretensions to being modern should be without one or more traveling cranes, but these should be supported by a system of auxiliary lifts along the sides of the shop. That traveling cranes are in many places a detriment to cheap production instead of an aid is partly because of this omission, and partly because many places do not know how to work them to the best advantage. It is a patent fact to all close observers that in shops having the best equipment molders are kept continually waiting for lifts. Many reasons and excuses can be given, but the principal one is that our own inventive abilities have not kept pace with the times. Our flasks are designed without any thought of quick handling, and our lifting and hitching tools, for the most part, remain a relic of 30 years ago.

When a journeyman I worked in some large shops where only one set of lifting chains were provided, and when they broke, which was quite frequently, because of ill usage, the greater part of the shop's crew was idle, waiting until they were repaired, which took some time, as in one or two instances the blacksmith's shop was at a considerable distance.

That there should be two or more sets of chains of different sizes, as well as plenty of hooks, slings, &c., the best managers will admit. Fig. 1 is a style of lifting chain which I have in use; it adapts itself to four different lengths and gives admirable satisfaction, two large links, *a*, being placed at convenient points to allow for the doubling up and insertion of the hook *b*. Fig. 2 is a sketch of the handiest lifting apparatus used in the foundry. Its easy adjustability and quick action are its best recommendations. The sketch shows it hitched on a large cylinder flask (just the opposite from the way it is usually hitched on long flasks). When the flask is lifted off it is set so that the trunnions will rest in the horse at the right of the figure. The cope is then easily turned over by the men and the crane can pass along to further work. This operation when managed properly does not take more than a fraction of a minute.

The figure also shows a method of binding which as far as I am aware is a new departure. It does away with the necessity of placing long bolts in bottom and top of flasks and then screwing them up with binder in position. The cylinder flask shown has no bars, although the bore is 28 inches, but instead an iron grid on top, to which are attached wrought iron eyes for the binder to go through. They are also cast in the grate on the bottom. All that it is necessary to do is to push the binder up a little and let it fall into its place in the bottom plate. A few wedges here and there, and it is secure. By this means a man will securely bind a large mold in a few minutes. By some other methods in vogue this would take hours.

There is another point about the cant hooks that should not be lost sight of and that is where copes are only partly rammed up or have cores hanging from them, so as to make a level lift with the chains tedious, they are just the thing, as they will catch equally well anywhere on the flanges. For lifting any castings that have flanges or other projections out of the floor they have no superior. They are perfectly safe, and when in use a short time they are considered indispensable.

The shifting or changing hook is a valuable tool, and mostly all shops have some kind of an arrangement. As it is usual, when carrying cores, ladles and miscellaneous loads on the traveler, to first set them down before transferring to another crane, much time is saved by using a proper changing hook. With a hook such as is shown in the sketch, Fig. 3, it would be a quick and easy operation to lower off a load from the traveler to one of the side jib cranes. The hook has the advantages of a small first cost, no welds, easily managed, and thoroughly safe and serviceable.

The method of making flasks and the style of construction is a matter of great importance to most shops. I generally have a frame or outline of the part I want made by the carpenter, and the rest swept in the floor and cast open sand. I append a sketch of a rather crooked "rig" for making the housing of a large vertical engine which was made in this way. Its general dimensions are about 13 feet long, 4 feet wide and 4 feet deep. Aside from the cost of the meal, bolts and pins it cost me for pattern making $2.50; molding, $14.07, and common labor, $3, or a total cost of $19.57, which certainly is cheap for a flask of its size. The bottom plate was made in two parts so as to come in handy afterward for core plates, as shown in Fig. 4. The sketch itself is shown in Fig. 7.

Speaking of core plates, how many of us are there who have not seen the slipshod manner in which they are constructed in all shops, and how core makers have to put chains around core box and plate to enable them to "roll over." Such a method is not allowable in the best practice except in extreme cases. A plate, the back view of which is shown, accomplishes the purpose of saving the core box, and the rolling over is easier, far quicker and safer. The box will not slip from the plate if securely clamped, as it should be in any case. In some cases I cast in steel trunnions on the ends and find they often come in very handy. In others I core out hole and thread it, so that a trunnion with a standard

* Read at the meeting of the American Foundrymen's Association, Boston, June, 1902.

thread can be screwed in in case of necessity. Many cores are got out of shape by rolling over in the old way, besides marring the boxes. Plates should be well ribbed and strong enough to prevent springing. The plate shown is a time saver and has many advantages over those in almost universal use.

The most clumsy tool among foundry lifting devices is the more or less modern I-beam, and the cast iron and oak beams will remain with us for many years to come. For very large work I prefer a well designed cast iron or cast steel beam, while for medium work I have a decided liking for the oak on account of its lightness and

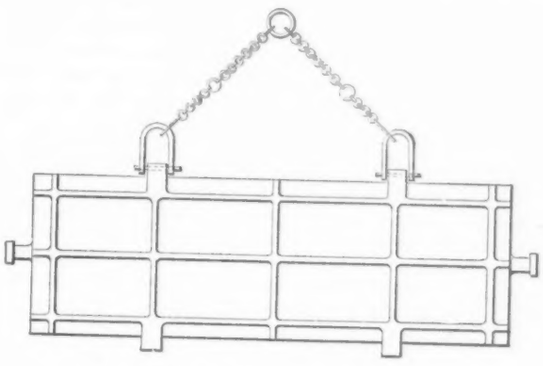


*Fig. 4.—Rig for Making an Engine Housing.*

*Fig. 3.—Shifting Hook.*

*Fig. 5.—A Handy Horse.*

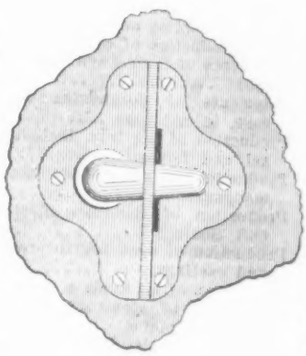


*Fig. 6.—Flask Pin.*

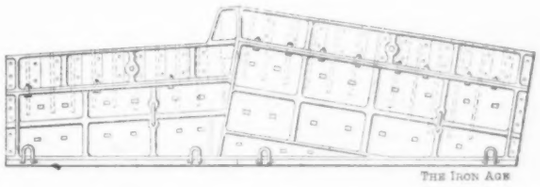



*Fig. 7.—Rig for Making an Engine Housing.*

SHOP TOOLS AND RIGS.

general handiness. An oak beam like the sketch I made some time ago, and it is a perfectly satisfactory tool in every respect. It will be seen that the beam is not weakened at any point by holes for the clevices, they being bolted to a wrought iron strap running under the beam and forming a perfect rest for it. It is secured to the beam with lag screws. A beam, hook and sling are shown in the illustration.

There are really few flask pins that give satisfaction. The device shown in Fig. 6 I have in use nearly two years on a set of bench flasks, and so far is perfectly serviceable in every respect. It combines the handle pin and clamp, or fastening device, by simply pushing in a cut spike when the flask is closed, there being a shoulder on the pin for this purpose. The device is cast iron. I also employ the same style with slight alterations on all my wooden boxes with very gratifying results. The flask has not to be cut to put them on, as they are simply screwed to the side. They are very quickly put on, and the molder never has to take his lifter to pick the dirt out of the holes.

There could be many other things said on this inexhaustible subject which the limits of a brief paper of this kind necessarily curtail. "Repeat molding" in loam and sand and special rigs for rapid molding I may in the near future make the subjects of another paper, as these matters are very interesting to foundry managers, as it is in these particulars that the ingenuity and real ability of the foundryman is shown. The best pusher is he who gets up good "rigs," not for one particular job, but for everything. Never think you have completed making improvements, there is always room. On many classes of work the foreman must be an engineer of no mean ability, and if he does not know his business it will tell in construction work quicker than any other branch of the foundry management, excepting, possibly, the mixing and melting of iron.

It is a common thing, in many shops, when a large cope is to be kept above the floor, to pile up the whole place with small wooden boxes, barrels and other truck to support it. A very light and handy set of horses for such purposes should be a part of every shop's equipment. I cannot imagine anything cheaper than the design shown in the sketch; as only some old pipe is needed with a cast iron flange run around them on both ends. A sketch is shown, Fig. 5. The clutch hook is also handy on the end of a strong chain for lifting awkward castings. The greatest care should be taken of chains and hooks, and they should be kept safe by occasional annealing. The loss of life which in many cases is akin to murder is due, in a great measure, to this carelessness. Well designed lifting apparatus is a money maker, and the greatest of diligence should be exerted in keeping it in good and proper order.

## A New Pyrometer.

Until very recent years, says *Engineering*, no satisfactory method of measuring really high temperatures was at the disposal of manufacturers, or, indeed, physicists, though the latter were in certain cases able to make use of the air thermometer. As matters stand, there is a choice between a number of instruments, all pretty reliable. In some of these thermo-couples are used to indicate the temperature, in others the increase in the resistance of a platinum wire, while another apparatus is based on the fact, discovered by Graham, that the viscosity of a gas increases with its temperature, so that the flow of gas through an orifice of given size is diminished as its temperature rises. A pyrometer of another type, and of very great interest from a theoretical point of view, and one likely to be of much service industrially, is described by M. Féry in a recent issue of the *Comptes Rendus*. A series of researches by different investigators has established the fact that the heat radiated from a body at an absolute temperature, $T$, to another at an absolute temperature, $t$, is given by the equation $Q = k(T^4 - t^4)$. Unfortunately, however, the coefficient $k$ depends on the nature of the surface of the radiating body, and this would constitute a difficulty were it not for the further fact that the radiation from the interior of a hollow shell is the same as from that of the theoretical "perfectly black" body, and is therefore quite independent of the chemical nature or surface conditions of the shell. Now M. Féry points out that in many cases it is desired to know the temperature of a furnace, the interior of which is visible through a small hole. The radiation proceeding from this hole is thus practically that from a hollow shell, and is therefore independent of the material of which the furnace is built. By measuring this radiation by means of a thermopile, the temperature of the furnace may be found by means of the equation given above, $k$ being then a constant determined, once and for all, for the particular instrument used. It is unnecessary, in this method of measuring temperatures, to place any kind of instrument inside the furnace. The whole of the apparatus used stands outside, and is therefore not subjected to any great rise of

temperature. M. Féry describes in his paper a special form of observing instrument he has had constructed on these lines, and gives the results of a comparison of the temperatures determined by its aid, and the same temperatures as measured by a platinum rhodium couple. The range of the observations was from 844 degrees C. up to 1458 degrees C., and the average error was about ½ degree C. Using the same instrument to measure the temperature of the positive carbon of an arc lamp, he finds this to be 3490 degrees C.

## Up-to-Date Chinese Engineering.

L. F. Bellinger contributes an interesting article to *Engineering News*, in which he describes several types of water wheels used in that country. Two undershot wheels are mentioned which are made entirely of bamboo; floats, buckets, rims, spokes, axle, irrigating trough, journals, pillars, wind bracing and all. Both are used for irrigation purposes. The one at the river is 30 feet in diameter and has a 4-foot face; the one at the side channel is larger than the average size, being 35 feet in diameter, with 4-foot face.

The water is raised in the same manner in both wheels—viz., large bamboo stalks are sawed off at the joints, leaving the hollow stem about 4 inches inside diameter and 4 feet long. These are placed at an obtuse angle with the plane of the rim, squared on the sides to afford some resistance to the water, and thus aid the floats, which are at 90 degrees to the plane of the rim. As the current forces the wheels slowly around, the buckets rise out of the water and discharge into the trough at the top about two-thirds full. While a little trickles out on the ascent the economical hight at which to place the trough is well chosen. All the water is discharged by the time the greatest altitude is reached, and the water flows from the trough into the irrigating ditches.

With apologies to E. D. Leavitt, the following comparison of the cost of raising water between the Chinese type of wheel and that described in *Engineering News* of November 21, 1901, is herewith given in the "deadly parallel columns":

| Items. | Wheel. American. | Wheel. Chinese. |
|---|---|---|
| Diameter of wheel, feet | 65 | 35 |
| Hight water is lifted, feet | 50 | 25 |
| Face of wheel, feet | 12 | 4 |
| Number of buckets | 550 | 48 |
| Revolutions per minute | 7 | 1 |
| Peripheral speed (per second) feet | 12 | 2 |
| Capacity, gallons per 24 hours | 75,000,000 | 120,000 |
| Cost of wheel (about) | $60,000 | $1.80 |
| Investment per 1000 galls. capacity, cents | 80 | 1½ |
| Investment per 1000 gallons capacity, per 25-foot lift, cents | 40 | 1½ |

We may offset the cost of the wing dam for the Chinese wheel by the boiler and electric plant of the American wheel as being about in the same proportion of cost as given above. The capital invested in the Chinese wheel is arrived at as follows: Professor Brill states that five men can build such a wheel in a week, and that the average wage in that section is 6 cents per day. Then we have this table as the cost of constructing one wheel:

| | |
|---|---|
| Three farmers, at 5 cents per day each | 15 cents |
| One skilled wheelwright, at 7 cents a day | 7 " |
| One general superintendent, at 8 cents a day | 8 " |
| The total, each day, makes the owner feel like | 30 cents |

This for six consecutive days makes a grand total of $1.80 per wheel. It is even said that some wealthy landlords have as much as $11 or $13 invested in such improved machinery. As these wheels displace much manual labor, they are not liked by the labor organizations (?), who favor the good old method of the "strike water," by which the water is raised by manual labor.

# Complete Statistics of Iron and Steel Production in 1901.

James M. Swank, general manager of the American Iron and Steel Association, Philadelphia, has just issued his annual statistical report, giving the complete statistics of iron and steel production in the United States and Canada in 1901, also statistics of the world's iron and steel production in 1899 and 1900. Statistics of last year's production in a number of branches of the American iron trade have been published in the *Bulletin* of the association from time to time since the year closed, and have been reproduced in these columns, but we now have full statistics for all branches. As usual, the work has been exceedingly well done, but the report just issued shows an improvement on its predecessors in giving greater details relative to some products, notably pig iron, which is separated into the various grades. An abstract of the figures is as follows:

### General Statistical Summary for the United States.

The following table gives the production of iron ore, the shipments of Lake Superior iron ore and Connellsville and Pocahontas coke, the production of leading articles of iron and steel, the imports and exports of iron ore and iron and steel and the miles of new railroad built in 1901, as compared with 1900:

| Articles.—Gross tons, except for coke and nails. | 1900. | 1901. |
|---|---|---|
| Total production of iron ore | 27,553,161 | 28,887,479 |
| Shipments of iron ore from Lake Superior | 19,059,393 | 20,589,237 |
| Production of Pennsylvania anthracite coal | 51,221,353 | 60,242,566 |
| Total production of all kinds of coal | 240,965,917 | ..... |
| Total production of coke, in net tons | 20,533,348 | ..... |
| Shipments of Connellsville coke, in net tons | 10,166,234 | 12,609,949 |
| Shipments of Pocahontas Flat Top coke, in net tons | 1,341,444 | 1,279,972 |
| Production of pig iron, including spiegel and ferromanganese | 13,789,242 | 15,878,354 |
| Production of spiegeleisen and ferromanganese | 255,977 | 291,461 |
| Production of Bessemer steel ingots and castings | 6,684,770 | 8,713,302 |
| Production of open hearth steel ingots and castings | 3,398,135 | 4,656,309 |
| Production of all kinds of steel | 10,188,329 | 13,473,595 |
| Production of structural shapes, not including plates | 815,161 | 1,013,150 |
| Production of plates and sheets, except nail plate | 1,794,528 | 2,254,425 |
| Production of all rolled iron and steel, except rails | 7,101,761 | 9,474,688 |
| Production of Bessemer steel rails | 2,383,654 | 2,870,816 |
| Production of all kinds of rails | 2,385,682 | 2,874,639 |
| Production of iron and steel wire rods | 846,291 | 1,365,934 |
| Production of all rolled iron and steel, including rails | 9,487,443 | 12,349,327 |
| Production of iron and steel cut nails, in kegs | 1,573,494 | 1,542,240 |
| Production of iron and steel wire nails, in kegs | 7,233,979 | 9,803,822 |
| Production of tin plates and terne plates | 302,665 | 399,291 |
| Imports of iron ore | 897,831 | 966,950 |
| Exports of iron ore | 51,460 | 64,703 |
| Imports of iron and steel, value | $20,443,911 | $20,394,995 |
| Exports of iron and steel, value | $129,633,480 | $102,534,575 |
| Miles of new railroad built | 4,157 | 5,368 |

### PRODUCTION OF PIG IRON.

Twenty States made pig iron in 1901, against 21 in 1899 and 1900. The total production of pig iron in 1901 was 15,878,354 gross tons, against 13,789,242 tons in 1900, 13,620,703 tons in 1899, 11,773,934 tons in 1898 and 9,652,680 tons in 1897. The production in 1901 was 2,089,112 tons more than in 1900. The following table gives the half yearly production in the last six years:

| Periods. | Gross tons. 1896. | Gross tons. 1897. | Gross tons. 1898. | Gross tons. 1899. | Gross tons. 1900. | Gross tons. 1901. |
|---|---|---|---|---|---|---|
| First half | 4,976,236 | 4,403,476 | 5,869,703 | 6,289,167 | 7,642,569 | 7,674,613 |
| Second half | 3,646,891 | 5,249,204 | 5,904,231 | 7,331,536 | 6,146,673 | 8,203,741 |
| Totals | 8,623,127 | 9,652,680 | 11,773,934 | 13,620,703 | 13,789,242 | 15,878,354 |

The following table gives the half yearly production of pig iron by States in 1901, arranged according to statistical prominence:

| States.—Gross tons. | First half 1901. | Second half 1901. |
|---|---|---|
| Pennsylvania | 3,549,148 | 3,794,109 |
| Ohio | 1,598,850 | 1,727,575 |
| Illinois | 739,409 | 857,441 |
| Alabama | 627,214 | 597,998 |
| Virginia | 217,819 | 230,843 |
| Tennessee | 178,244 | 158,895 |
| Maryland | 157,628 | 145,558 |
| New York | 109,317 | 174,345 |
| Missouri, Colorado and Washington | 88,775 | 114,634 |
| Wisconsin | 124,273 | 83,278 |
| Michigan | 93,981 | 76,781 |
| West Virginia | 74,630 | 91,967 |
| New Jersey | 65,524 | 90,222 |
| Kentucky | 26,361 | 42,101 |
| Georgia | 15,547 | 11,786 |
| Connecticut | 4,621 | 3,821 |
| Massachusetts | 1,952 | 1,434 |
| Texas | 1,320 | 953 |
| Totals | 7,674,613 | 8,203,741 |

The production of pig iron in 1901, classified according to the fuel used, was as follows, compared with the four preceding years:

| Fuel used.—Gross tons. | 1897. | 1898. | 1899. | 1900. | 1901. |
|---|---|---|---|---|---|
| Bituminous, chiefly coke | 8,464,692 | 10,273,911 | 11,736,385 | 11,727,712 | 13,782,386 |
| Anthracite and coke | 911,628 | 1,180,999 | 1,558,521 | 1,636,366 | 1,668,808 |
| Anthracite alone | 21,149 | 22,274 | 41,031 | 40,682 | 43,719 |
| Charcoal | 255,211 | 296,750 | 284,766 | 339,874 | 360,147 |
| Charcoal and coke | ..... | ..... | ..... | 44,608 | 23,294 |
| Totals | 9,652,680 | 11,773,934 | 13,620,703 | 13,789,242 | 15,878,354 |

PRODUCTION OF PIG IRON BY GRADES.

For the first time we give a series of tables showing the production by States of all kinds of pig iron by grades in 1900 and 1901, including spiegeleisen and ferromanganese. A few castings made direct from blast furnaces are included.

The Bessemer figures for 1900 and 1901 include low phosphorus pig iron, but they do not include the comparatively small quantity of Bessemer pig iron produced with charcoal. They differ from the Bessemer figures heretofore printed, especially for 1900, in which year low phosphorus pig iron was not included.

The following table gives by grades our total production of pig iron in 1900 and 1901. White and mottled pig iron made with charcoal is included in the charcoal iron reported:

| Grades.—Gross tons. | 1900. | 1901. |
|---|---|---|
| Bessemer and low phosphorus pig iron | 7,978,209 | 9,589,936 |
| Basic pig iron | 1,072,376 | 1,448,850 |
| Forge pig iron | 793,092 | 639,184 |
| Foundry pig iron | 3,037,689 | 3,186,348 |
| Malleable Bessemer pig iron | 173,413 | 256,532 |
| Charcoal pig iron | 339,874 | 360,147 |
| White and mottled and miscellaneous grades | 129,909 | 97,374 |
| Spiegeleisen and ferromanganese | 255,977 | 291,461 |
| Direct castings | 8,703 | 8,522 |
| Totals | 13,789,242 | 15,878,354 |

PRODUCTION OF BESSEMER STEEL.

The following table gives the production of Bessemer steel ingots and steel castings in the United States in the last five years, by States, including the production by the Clapp-Griffiths, Robert-Bessemer and Tropenas works:

| States.—Gross tons. | 1897. | 1898. | 1899. | 1900. | 1901. |
|---|---|---|---|---|---|
| Pennsylvania | 3,060,049 | 3,402,254 | 3,968,779 | 3,488,731 | 4,293,439 |
| Ohio | 1,041,541 | 1,489,115 | 1,679,237 | 1,388,124 | 2,154,846 |
| Illinois | 943,774 | 1,105,040 | 1,211,246 | 1,115,571 | 1,324,217 |
| Other States | 429,951 | 612,608 | 727,092 | 692,344 | 940,800 |
| Totals | 5,475,315 | 6,609,017 | 7,586,354 | 6,684,770 | 8,713,302 |

PRODUCTION OF OPEN HEARTH STEEL.

The total production of open hearth steel in the United States in 1901, including direct steel castings, was 4,656,309 gross tons, against 3,398,135 tons in 1900, an increase of 1,258,174 tons, or over 37 per cent. The production of open hearth steel has more than doubled in the last four years, having increased from 2,230,292 tons in 1898 to the figures above given for 1901. The following table gives the production of open hearth steel ingots and castings, by States, since 1896:

| States.—Gross tons. | 1896. | 1897. | 1898. | 1899. | 1900. | 1901. |
|---|---|---|---|---|---|---|
| New England | 48,055 | 51,402 | 47,381 | 57,124 | 74,522 | 170,876 |
| New York and New Jersey | 32,120 | 39,521 | 47,957 | 61,461 | 67,361 | 82,985 |
| Pennsylvania | 1,009,608 | 1,271,751 | 1,817,521 | 2,393,811 | 2,699,502 | 3,594,763 |
| Ohio | 64,691 | 78,357 | 79,886 | 117,458 | 130,191 | 184,943 |
| Illinois | 101,832 | 120,609 | 183,103 | 246,183 | 285,551 | 398,522 |
| Other States | 42,394 | 47,031 | 54,444 | 71,279 | 141,008 | 224,220 |
| Totals | 1,298,700 | 1,608,671 | 2,230,292 | 2,947,316 | 3,398,135 | 4,656,309 |

PRODUCTION OF CRUCIBLE STEEL.

The production of crucible steel in the United States in 1901 amounted to 98,513 gross tons, against 100,562 tons in 1900, 101,213 tons in 1899, 89,747 tons in 1898, 69,959 tons in 1897, 60,689 tons in 1896, 67,666 tons in 1895, 51,702 tons in 1894 and 63,613 tons in 1893. Nine States made crucible steel in 1901—namely, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Tennessee, Ohio, Illinois and Wisconsin. The direct castings produced in 1901 by the crucible process, included above, amounted to 3927 tons. Pennsylvania made about three-fourths of the country's total crucible steel production in 1901.

PRODUCTION OF MISCELLANEOUS STEEL.

The production of steel in the United States in 1901 by various minor processes amounted to 5471 gross tons, almost all of which was in the form of direct castings, against 4862 tons in 1900, 4974 tons in 1899, 3801 tons in 1898, 3012 tons in 1897, 2394 tons in 1896, 858 tons in 1895, 4081 tons in 1894, 2806 tons in 1893, 4548 tons in 1892 and 4484 tons in 1891.

PRODUCTION OF ALL KINDS OF STEEL.

The production of all kinds of steel ingots and castings in the United States in 1901 is given in the following table, in gross tons. Of the total production, 317,570 tons were direct steel castings. The increase in the production of all kinds of steel in 1901, as compared with 1900, was 3,285,266 tons, or 32.2 per cent.:

| States.—Gross tons. | Bessemer. | Open hearth. | Crucible and miscellaneous. | Total. Ingots and castings. |
|---|---|---|---|---|
| Massachusetts, Rhode Island and Connecticut | ..... | 170,876 | 2,237 | 173,113 |
| New York and New Jersey | ..... | 82,985 | 23,763 | 106,748 |
| Pennsylvania | 4,293,439 | 3,594,763 | 74,800 | 7,963,002 |
| Delaware, Maryland, West Virginia, Kentucky, Tennessee and Alabama | 736,547 | 179,548 | 75 | 916,170 |
| Ohio | 2,154,846 | 184,943 | } | 2,340,021 |
| Indiana and Illinois | 1,324,217 | 430,012 | 2,508 | 1,756,505 |
| Michigan, Wisconsin, Minnesota, Missouri, Colorado and California | 204,253 | 13,182 | 601 | 218,036 |
| Totals | 8,713,302 | 4,656,309 | 103,984 | 13,473,595 |

In 1900 the production of all kinds of steel was as follows: Bessemer steel, 6,684,770 gross tons; open hearth steel, 3,398,135 tons; crucible steel, 100,562 tons; all other steel, 4862 tons: total, 10,188,329 tons, against 10,639,857 tons in 1899. Included in the figures for 1900 are 192,803 tons of direct castings.

PRODUCTION OF ALL KINDS OF STEEL CASTINGS.

The following table gives by States the production of Bessemer, open hearth, crucible and other steel castings in 1901, in gross tons:

| States.—Gross tons. | Bessemer. | Open hearth. | Crucible and miscellaneous. | Total. Gross tons. |
|---|---|---|---|---|
| Massachusetts, Connecticut, New York and New Jersey | .... | 37,154 | 6,086 | 43,240 |
| Pennsylvania | 715 | 108,486 | 1,101 | 110,302 |
| West Virginia, Tennessee, Alabama and Ohio | 693 | 27,473 | 200 | 28,366 |
| Indiana, Illinois and Michigan | 3,641 | 115,327 | 1,196 | 120,164 |
| Wisconsin, Minnesota, Missouri, Colorado and California | 1,715 | 13,182 | 601 | 15,498 |
| Totals | 6,764 | 301,622 | 9,184 | 317,570 |

### WEIGHT OF ALL KINDS OF RAILS.

The following table gives the production of all kinds of rails in 1901, according to the weight of the rails per yard. Street rails are included in the total production of rails:

| Kinds of rails.—Gross tons. | Under 45 pounds. | 45 pounds and less than 85. | 85 pounds and over. | Total. Gross tons. |
|---|---|---|---|---|
| Bessemer steel rails | 152,110 | 2,224,884 | 493,822 | 2,870,816 |
| Open hearth steel rails. | 1,566 | 527 | ..... | 2,093 |
| Iron rails | 1,730 | ..... | ..... | 1,730 |
| Totals | 155,406 | 2,225,411 | 493,822 | 2,874,639 |

The total production of all kinds of rails in 1900 was 2,385,682 tons, of which 157,531 tons weighed less than 45 pounds to the yard, 1,626,093 tons weighed 45 pounds and less than 85 pounds and 602,058 tons weighed 85 pounds and over. The tonnage of street rails can no longer be separated from the total rail tonnage.

### PRODUCTION OF STRUCTURAL SHAPES.

Our statistics of iron and steel structurel shapes embrace the production of beams, beam girders, zee bars, tees, channels, angles and other structural forms, but they do not include plate girders made from plates. Plates are provided for under other classifications, and in the general statistics of plates are included all plates cut to specifications. Nearly all the structural shapes and plates used for structural purposes are made of steel. The total production of strictly structural shapes in 1900 was 815,161 tons and in 1901 it was 1,013,150 tons. The production of structural shapes in 1900 and 1901, by States, was as follows:

| States.—Gross tons. | 1900. | 1901. |
|---|---|---|
| New York and New Jersey | 34,242 | 51,002 |
| Pennsylvania | 759,712 | 925,940 |
| Alabama and Ohio | 12,344 | 30,508 |
| Colorado and California | 8,863 | 5,700 |
| Totals | 815,161 | 1,013,150 |

### PRODUCTION OF WIRE RODS.

The production of iron and steel wire rods in the United States in 1901 amounted to 1,365,934 gross tons, against 846,291 tons in 1900, 1,036,398 tons in 1899 and 1,071,683 tons in 1898, showing an increase of 519,643 tons, or over 61 per cent., in 1901 as compared with 1900. Of the total production in 1901, 1,365,459 tons were steel and 475 tons were iron rods. The following table gives the production by States in the last three years:

| States.—Gross tons. | 1899. | 1900. | 1901. |
|---|---|---|---|
| Massachusetts, Connecticut, Rhode Island, New York and Connecticut | 176,877 | 212,584 | 71,553 |
| Pennsylvania | 319,058 | 240,533 | 386,037 |
| Kentucky, Alabama and Ohio | 312,620 | 244,731 | 422,679 |
| Indiana and Illinois | 264,775 | 226,525 | 381,117 |
| Totals | 1,036,398 | 846,291 | 1,365,934 |

### PRODUCTION OF PLATES AND SHEETS.

The production of plate and sheet iron and steel in the United States in 1901, excluding nail plate, amounted to 2,254,425 gross tons, against 1,794,528 tons in 1900, an increase of 459,897 tons, or over 25 per cent. Skelp iron and steel are not included in our statistics of plates and sheets, but are classed with other rolled products. The following table gives the production by States of all kinds of plates and sheets in 1901:

| States.—Gross tons. | 1901. |
|---|---|
| New England | 416 |
| New York and New Jersey | 6,512 |
| Pennsylvania | 1,572,500 |
| Delaware and Maryland | 29,484 |
| West Virginia | 31,928 |
| Kentucky and Alabama | 47,503 |
| Ohio | 294,266 |
| Indiana, Illinois, Michigan, Missouri and Colorado | 271,816 |
| Total | 2,254,425 |

The production of "black plates for tinning" alone in 1901, which is included above, was 385,026 gross tons. Of this total Pennsylvania made over 50 per cent. New Jersey, Maryland, West Virginia, Ohio, Indiana, Michigan and Missouri also made black plates for tinning in 1901.

### PRODUCTION OF TIN PLATES.

The duty on tin plates and terne plates provided for in the tariff act of 1890 went into effect on July 1, 1891. From that date until the close of the fiscal year ending on June 30, 1897, the statistics of our production of tin plates and terne plates were regularly collected for the Treasury Department by Colonel Ira Ayer, special agent. For the second half of 1897 and the year 1898 they were collected by *The Metal Worker* of New York, and for 1899, 1900 and 1901 they have been compiled by the American Iron and Steel Association. From the data thus obtained we have prepared the following table of our production of tin plates and terne plates in the calendar years 1891 to 1901. The production of tin dipping plants is included:

| Calendar years. | Gross tons. | Calendar years. | Gross tons. |
|---|---|---|---|
| 1891 (last six months) | 999 | 1897 | 256,598 |
| 1892 | 18,803 | 1898 | 326,915 |
| 1893 | 55,182 | 1899 | 360,875 |
| 1894 | 74,260 | 1900 | 302,665 |
| 1895 | 113,666 | 1901 | 399,291 |
| 1896 | 160,362 | | |

### PRODUCTION OF ALL ROLLED IRON AND STEEL.

By the phrase rolled iron and steel we include all iron and steel rolled into finished forms, as follows: 1, All sizes of iron and steel rails; 2, plate and sheet iron and steel; 3, iron and steel plates for cut nails and cut spikes; 4, wire rods; 5, iron and steel structural shapes; 6, bar, bolt, hoop, skelp, rolled axles, fish plates, rolled armor plate and other rolled products. Forged armor plate, hammered axles and other forgings are not included, nor such intermediate forms as muck bars, billets and tin plate and sheet bars.

The production of all iron and steel rolled into finished forms in the United States in 1901 was 12,349,327 gross tons, against 9,487,443 tons in 1900, an increase of 2,861,884 tons, or over 30 per cent. Twenty-six States rolled either iron or steel or both iron and steel in 1901. The following table gives the total production by States of rolled iron and steel in 1901, in gross tons:

| States.—Gross tons. | 1901. |
|---|---|
| Maine and Massachusetts | 165,100 |
| Rhode Island and Connecticut | 48,043 |
| New York | 182,948 |
| New Jersey | 143,367 |
| Pennsylvania | 6,962,668 |
| Delaware | 58,242 |
| Maryland | 301,446 |
| Virginia | 29,026 |
| West Virginia | 201,264 |
| Kentucky | 156,506 |
| Tennessee and Georgia | 30,214 |
| Alabama | 109,391 |
| Ohio | 1,566,996 |
| Indiana | 399,707 |
| Illinois | 1,442,165 |
| Michigan | 103,063 |
| Wisconsin | 181,867 |
| Missouri | 37,182 |
| Colorado and Wyoming | 197,980 |
| Washington, Oregon and California | 32,152 |
| Total | 12,349,327 |

The total production of all kinds of iron and steel rolled into finished forms in the United States from 1899 to 1901 is given below:

| | 1899. Gross tons. | 1900. Gross tons. | 1901. Gross tons. |
|---|---|---|---|
| Iron and steel rails | 2,272,700 | 2,385,682 | 2,874,639 |
| Bars, hoops, skelp and shapes. | 4,996,801 | 4,390,697 | 5,785,479 |
| Wire rods | 1,036,398 | 846,291 | 1,365,934 |
| Plates and sheets, except nail plate | 1,903,505 | 1,794,528 | 2,254,425 |
| Cut nails | 85,015 | 70,245 | 68,850 |
| Totals | 10,294,419 | 9,487,443 | 12,349,327 |

### PRODUCTION OF IRON BLOOMS AND BILLETS.

The blooms and billets made in forges directly from the ore in 1901 amounted to 2310 gross tons, against 4292 tons in 1900, 3142 tons in 1899, 1767 tons in 1898, 1455 tons in 1897, 1346 tons in 1896, 40 tons in 1895, 40 tons in 1894, 864 tons in 1893 and 2182 tons in 1892. All the ore blooms produced in the last four years were made by the Chateaugay Ore & Iron Company of Plattsburg, N. Y., at their Standish Iron Works.

The iron blooms produced in forges from pig and scrap iron in 1901, and which were for sale and not intended for the consumption of the makers, amounted to 8237 gross tons, against 8655 tons in 1900, 9932 tons in 1899, 6345 tons in 1898, 7159 tons in 1897, 6494 tons in 1896, 7185 tons in 1895, 3221 tons in 1894 and 6605 tons in 1893. All the pig and scrap blooms made in forges from 1895 to 1901, and intended to be for sale, were made in Pennsylvania and Maryland.

PRODUCTION IN CANADA.

The production of pig iron in Canada, as ascertained from the manufacturers by the American Iron and Steel Association, amounted in the calendar year 1901 to 244,976 gross tons, against 86,090 tons in 1900, an increase of 158,886 tons, or over 184 per cent. Of the production in 1901, 228,893 tons were made with coke and 16,083 tons with charcoal. The production of Bessemer pig iron, included above, amounted to 29,577 tons. Neither spiegeleisen nor ferromanganese was made.

The total production of steel in Canada in 1901 was 26,084 tons, against 23,577 tons in 1900, an increase of 2507 tons. Both Bessemer and open hearth steel ingots and castings were made in 1900 and 1901. Of the total production of open hearth steel in 1901 less than one-fourth was made by the acid process.

The production of open hearth steel rails in 1901 amounted to 891 gross tons, against 700 tons in 1900; structural shapes, 4388 tons, against 4674 tons in 1900; cut nails made by rolling mills and steel works having cut nail factories connected with their plants, 126,891 kegs of 100 pounds, against 117,186 kegs in 1900; plates and sheets, 2857 tons, against 2100 tons in 1900; all other rolled products, excluding muck and scrap bars, blooms, billets, sheet bars, &c., 98,206 tons, against 87,984 tons in 1900. Changing the cut nail production to gross tons, the total quantity of all kinds of iron and steel rolled into finished products in 1901 amounted to 112,007 tons, against 100,690 tons in 1900.

On December 31, 1901, there were 14 completed furnaces in Canada and four other furnaces were in course of erection—two charcoal and two coke. In addition four furnaces were projected. Of the completed furnaces seven were in blast and seven were idle. During 1899-1901 four furnaces were erected by the Dominion Iron & Steel Company at Sydney, three of which were blown in in 1901. The fourth furnace was put in blast in January, 1902. Of the 14 completed furnaces nine were equipped to use coke, four to use charcoal and one to use charcoal and coke. The annual capacity of the 18 built or building furnaces on December 31, 1901, was 1,090,300 tons, of which 958,000 tons are credited to 11 coke furnaces.

On December 31, 1901, there were 18 completed rolling mills and steel works in Canada and two were building. Of these one was equipped for the manufacture of steel in a special Bessemer converter, one to make Tropenas steel and two standard Bessemer steel plants were being built, and four plants were equipped for the manufacture of open hearth steel and one open hearth steel plant was being built. The annual capacity of the built and building plants was 838,400 tons of steel and 981,900 tons of rolled products.

## Trade Publications.

**Wire Rope and the Hallidie Tramway.**—The Macomber & Whyte Rope Company, 19 and 21 South Canal street, Chicago, have just issued catalogue B for 1902, which gives complete information regarding the various grades of wire rope which they manufacture. They also manufacture the Hallidie tramway, and this specialty is likewise described and illustrated. The catalogue further contains lists on all wire rope fixtures, wire rope sheaves for the transmission of power, hoisting sheaves, wire rope blocks, &c. A complete table covering transmission of power by wire rope is given and the method of splicing wire rope is fully described. The company allude to the success which they have attained as manufacturers, especially in the line of their Monarch brand, now largely used by contractors and for mines, quarries, dredges and other purposes requiring a high grade rope. Their factory is located at Coal City, Ill.

**Galvanizing.**—The American Galvanizing Works, 1247 Fillmore street, Chicago, have issued a pamphlet relating to the various sizes, lengths and qualities of galvanized angles, equal legs; angles, unequal legs; round back 60-degree angles; galvanized flat bars, galvanized bands, scrolls, galvanized round bars and channels, for wind mill and tank towers, the galvanizing of such material engaging the special attention of the American Works.

**Railway Specialties.**—The Railway Appliances Company, Old Colony Building, Chicago, have issued a catalogue of railway specialties, including the Gilman-Brown emergency knuckle, the Femings car and engine replacer, the auxiliary coupling, the economic metallic packing, the Ajax cotton belting diaphragm, all metal bumping posts, car movers, &c.

## Shop Conditions.*

BY HUGH M'PHEE, BRIDGEPORT, CONN.

Taking the average foundry of the present day, generally speaking, we find conditions existing that are not creditable to either employer or the foreman in charge. A lack of interest, it seems to me, is the cause of this. The molder and apprentice, in my estimation, should not be held responsible for this, for we find that the improvements in all the other departments of great manufacturing concerns result in benefit to both employer and employee. Unfortunately these results are not met with in the foundry. Not that less work should be done, but ways and means should be provided to increase the efficiency of a shop. This, I think, can only be done by a combined effort on the part of the employer and his foreman to make the conditions such that the employee can have a place to work in that will give him heart and interest to do better than he ever did before.

Take the molder who commences at 7 a.m. As he strips for work, he hangs his clothes on a spike driven into the wall as near his floor as may be convenient. Many times these clothes drop to the floor, and no one bothers with them. Now he finds his flask shaken out during the night, but must tear the castings out of the sand, wet this down, get his shovel and temper his sand pile so that he can commence to mold. By the time he is ready to mold a day's work he is played out, but by dint of practice and the necessity of doing so he labors on with only one outlook before his mind—quitting time.

Now we know that things are usually severe enough to bear even with the best of conditions, for we all have had more or less of just this experience. Believing that a remedy is absolutely necessary, let us look at the conditions prevailing in the machine shop and the pattern shop. A machinist has a specified machine to operate, with helpers conveying the castings to be finished to him, keeping him supplied with material to perform his share of the production. Producing finished work gives him an interest in it which is of benefit to his employer. The same holds true in the pattern shop. The pattern maker has a bench to work at. His lumber is brought to the shop, laid down convenient to the saw and planer. He can get his material without any special exertion; in fact, everything is placed for him in such a way that he has only to perform the work that his trade demands.

Now, why cannot we have some such conditions existing in the foundry? This is in itself a less desirable place to work in on account of the dust and dirt. Have a place for each man to hang up his clothes in, so that he can wear good ones. Have his floor in the same condition as the machinist has his—ready to begin work on. Let helpers prepare his sand pile so that he can commence molding and not act in the capacity of a laborer the first two hours of the day. Let his castings be shaken out for him, his flasks be fixed up. He can then put in eight hours molding instead of six, and get out superior work and much more of it.

May this effort to present the subject in a somewhat different light result in awakening the interest of my foundry colleagues, and some action be taken toward the improvement of the conditions surrounding the molder. Then the trade will receive greater recognition everywhere and stand second to none.

The Southern railroads announce that beginning July 1 the rates of freight will refer to a minimum carload of 20 gross tons.

* Read before the American Foundrymen's Association, Boston, June, 1902.

## Foundry Costs.*

BY R. C. CUNNINGHAM, HOLYOKE, MASS.

At the last annual meeting of this association I presented a paper on "Foundry Costs." The ground I took at that time was that we were doing a large amount of work in our foundries which only increased our costs and did not increase our production, this unnecessary work being due to badly made and worn out patterns. The article was severely criticised by pattern makers and others in trade journals and by personal letters. One man went so far as to say that the principal reason that foundrymen were not consulted more in the construction of patterns was that very few could tell by looking at a drawing how a pattern should be made, and during his 25 years' experience as a pattern maker he had only met one foundryman who could read drawings intelligently. It was claimed that the paper had a tendency to create a bad feeling between foundrymen and pattern makers, and there would be constant wrangling as to how patterns should be made. I certainly had no intention of saying anything to belittle the pattern maker or to provoke discord in any shop. I made the statement at the time only in the interest of the foundrymen, and I feel to-day that I am backed by a large majority in what I said.

Shortly after the convention I had occasion to visit a prominent concern. In conversation with the manager he told me that he thought my paper would do good, and wanted me to go through his works and tell him just where he could save money. He further added, "I think we are about up to date, but am willing to learn." I went into his foundry, and in observing things my attention was attracted by a molder standing apparently waiting for something. While I was watching him the workman next to him passed him over his rammer. He took it and went to work. Upon investigating I found that these two molders had only one rammer, one shovel and one No. 4 riddle. Neither had a fine riddle, brush, pail or bellows, nor, in fact, any of the tools that are usually furnished by the company. They had quite a number of helpers in the shop. They did not give each of them a shovel. I spent the greater part of a day about the shop carefully observing the way the place was managed, and I think I am safe in saying that 10 per cent. of the men did not have proper tools to work with and depended on borrowing from the other men or upon what they pick up about the shop. As I was leaving, the manager called me into his office and inquired if I saw anything I would have different. I told him I thought there were some things that could be improved upon. He wanted to know what they were. I told him of the things I saw in the shop. He thanked me, and said: "I will look into it and I will write you." This happened about ten months ago. I had forgotten about it when a few weeks ago the following came to me:

> You will remember spending a day at our works several months ago and of expressing yourself about how you found things in the foundry. The next day after you were here I went into the foundry to find out the truth of your statement, and I will have to admit you did not half tell it. I went into the foundry and stayed there over a week, and I will say candidly I do not see how the men could do as much work as they did. In a few days every man had his supply of tools, marked with his number. I stopped the molders waiting around in the morning. I had all their patterns and flasks on their floors by 7 o'clock. I have the flasks fitted before the job comes into the foundry. The molders work no harder than they did before, but we are turning out more castings and they are much better. Our expenses remain about the same, lower if anything, which shows a reduction in the costs. The statements you made in your paper before the American Foundrymen's Association last year were facts. Our foundries are neglected. We should pay the same attention to them that we do to our machine shops. I sincerely hope you will give us another paper on the same subject this year.

This letter comes from a man who thought his foundry was up to date, and I have no doubt that there are many more of the same mind. Now I wish that every foundryman present at this convention, when he returns to his own home, would go into the foundry and do as this man did, stay there a week or a month if necessary (it is a good healthy place to stay) and just take notice of the patterns that come into the shop and see if the molders have the proper rigging.

See that there is no waiting for anything. Give your molders a chance and you will be surprised at the results. Now I wish every foundryman present to-day would try this, and at the end of three months write me the results; no matter what they are, I would like to know how you found things in your shops. Those of you who are about your shops daily have no doubt seen and corrected everything of this kind found there, but those of you who walk through your foundry only occasionally are the ones that I want to take this to heart and bear in mind that the little annoyances are where the time is lost. They may seem small in detail, but are large enough in the aggregate to increase the cost of your castings. The time when we can get more than a fair day's work from a man has gone by, and to-day every foundryman must keep close watch on his costs and production or he will find the balance on the wrong side of his ledger. In my opinion his only hope is to devise ways to do his work with more unskilled labor. By doing this he will not be dictated to, but will have a chance to get more benefit of his brain work than is now accorded to the employer of skilled labor.

There is one fact that we must not close our eyes to, and that is that the tendency of organized labor is to keep the production down to the lowest possible point, and at the same time increase the minimum rate of wages. Now with these cold facts staring us in the face we must watch very carefully and see that no work is done that we get no returns for. An hour or two spent on a badly made or worn out pattern means an increase in our cost, and does not increase our production, and in order to overcome this we must figure and scheme to have things so that the molder can turn out more work. An increase in our production without any increase in our cost is what we must aim for. To do this we must study every pattern, and if we can, by making changes, make a mold any quicker, we should not delay a single day in doing so.

I want to give you one illustration on this point: We have at our works a pattern for a 16-inch steam piston ring. During the past 25 years the company has made thousands of these rings. They were molded in the usual way. The pattern was made about 1 inch wider than the casting wanted, to be able to secure it on the face plate while turning. The ring is then cut off the desired width, and cut into four segments. The actual cost of labor on one set of these castings when they were ready to put into the cylinder was 75 cents. The casting in the rough weighed 23 pounds. The finished casting weighed 7½ pounds. The waste piece cut from the ring, that went into the scrap, weighed 6 pounds. Nine pounds went into turnings. I expended $3.75 on a new pattern and plates, and am now putting these same castings into the erecting room for 4 cents a set. Besides the saving on the iron, I am saving 71 cents on labor on each set of castings. The company make probably 500 set of these rings a year, including the new work and repairs. The saving on this job alone amounts to three hundred and fifty odd dollars. A half dozen jobs like this would pay the salary for a good man for one year.

I do not claim that every job can be put on a machine on plates and the same results obtained, but even if we can get an increase in our production of 25 per cent. without any increase in our expenses, it is certainly worth trying for. Our company have put on plates during the past year over 200 different patterns, and on none of them have we made anything less than 50 per cent. saving. Any foundryman is welcome to come and inspect our patterns. We have no secrets about our shop. What we have learned by experience we are willing you should profit by if you wish.

An amusing incident happened at our works a short time ago. A foundryman was visiting our shop and I was showing him this same pattern which I have mentioned here. After looking it over carefully, he said: "It is a very fine idea, but I fail to see where you get any credit for it. According to your own statement you have cut down your production about two-thirds. Now, unless your firm do differently from any other you

* Paper read at the meeting of the American Foundrymen's Association, Boston, June, 1902.

only get credit for what castings you turn out; where you formerly got credit for 23 pounds of castings, now you only get credit for 7½ pounds. It looks to me as if you were helping the machine shop at the expense of the foundry." I told him I was working for a firm that gave credit where it was due, and I think that every company should let their men understand that any improvements gotten up to reduce the costs or increase the production would be liberally paid for. It should be the aim of every foreman to encourage this among his men, particularly among the younger class. There is nothing that encourages a young man as much as it does to ask his opinion. We must remember that from among the young men we are to find our future foundry managers, and when they take the burden from our shoulders let us have the satisfaction of feeling that we exercised our ability to its fullest extent in filling up those dangerous pitfalls and removing as far as possible the stumbling blocks from their paths.

## British Columbia's Iron Resources May Be Developed.

TORONTO, June 23, 1902.—The Board of Trade of Vancouver Island has been considering the question of provincial aid to the iron industry. A bounty such as the Ontario Government gives for pig iron produced from provincial ore has been proposed. It has also been suggested that any grants of iron lands from the public domain be made conditional upon the manufacturing of the ore being confined to the province. The scheme that seems to find most favor with the Board of Trade is one which would provide for a royalty on all the iron ore mined, and for the payment out of the fund thus raised of a bonus on the pig iron manufactured.

The same question was also discussed at a meeting of the Voters' League in Victoria, Vancouver Island. Specimens of iron smelted at Port Townsend from British Columbia ore were exhibited. A statement of the sums paid out in bounties on iron and steel by the Dominion Government was read, and the rates of these bounties were quoted. The Provincial Government assayer addressed the meeting on the iron resources of British Columbia. He said that there is a great deal of magnetic iron scattered over the island coast, but that few deposits of any economic value have been worked. The chief of those operated is at Texada Island, where for 20 years iron ore has been mined. Some of the ore has been taken as far as San Francisco, but most of it has gone to Puget Sound, not to be made into pig iron, but to be used in fluxing. The property is an immense one, he said, and the company have done a considerable amount of development work, there being 300 feet of tunneling. In Sooke another iron deposit was discovered some years ago, but very little work has been done upon it. On Barkley Sound iron has been found in three places, all extensions of the same ore body. The ore there is of good quality, this having been proved by the successful treatment of some of it. There is a deposit in San Juan district, of whose extent and value little is known. On Redouda Island a property was worked four years ago, and is now bonded by the Tacoma Steel Company. In fact, added the provincial assayer, two American corporations control nearly all the iron ore on the coast. The difficulty as to smelting, he said, is that all the ore so far discovered is magnetic. Possibly hematite might be found on Queen Charlotte Islands. He referred also to the Glen Iron Mine near Kamloops, and said that near Kitchener in East Kootenay good iron deposits also occurred. In his opinion the main question is one of markets. It is a matter for investigation, he said, whether iron can be smelted in British Columbia and placed on the Asiatic market as cheaply as iron made in other parts of this continent.

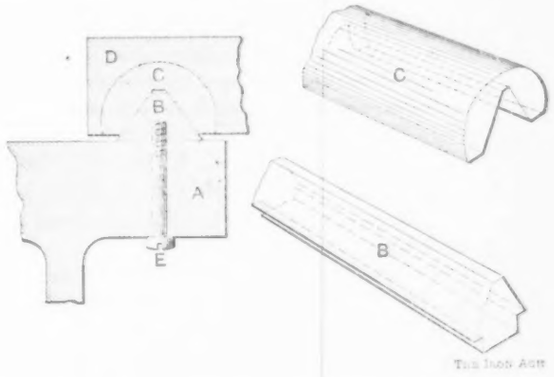
The general sentiment of the meeting was that something should be done to promote domestic smelting, and a committee was appointed to prepare a report as to the wisest policy.

In a recent interview, W. D. Verschoyle, a Vancouver mining man, said that he was in a position to know that before the end of the year at least two new large companies will be operating iron properties on the British Columbia coast.

For the Kitchener iron property they own on their Crow's Nest Pass line the Canadian Pacific Railroad Company are said to have refused a very large offer. This also is alleged to have been made by Americans interested in the steel industry. C. A. C. J.

## The Osgood Hardened and Ground Lathe and Planer Guides.

J. L. Osgood, Erie County Bank Building, Buffalo, N. Y., has designed an efficient guide or way applicable to machines having sliding surfaces, such as lathes, planers, shapers, &c. The improvement consists of inserting in the bed A of the machine a hardened and ground steel guide, slide or V, B, which takes the place of the usual cast iron guide. These are held in place by the screws E, and upon them rest the shoes C, which are carried by the moving part of the machine. Modern practice, with more than double the cutting efficiency of the tools of recent production, is exacting much more work from the machines than was formerly the case. Consequently the wearing surfaces must be improved to prevent rapid wear. It is claimed that these steel guides will outwear any other part of the machine, and provide a smoother and more accurate surface. The form of the guides and method of inserting them in the bed will be understood from the engraving.




THE OSGOOD HARDENED AND GROUND LATHE AND PLANER GUIDES.

**The Youngstown Steel Casting Company.**—The new plant of the Youngstown Steel Casting Company, at Youngstown, Ohio, is about finished, and will be started up in a short time. The main building, containing the casting house, is 300 feet long and 60 feet wide, built of steel and brick. It is equipped with two electrical traveling cranes, each of 20 tons capacity. A 15-ton open hearth furnace has been built, and room has been left for another of the same size. The furnace is fired by gas producers built by the S. R. Smythe Company of Pittsburgh. Power is furnished by 500 horse-power Meehan water tube boilers of the latest type, which were installed by the Meehan Boiler & Construction Company of Lowellville, Ohio. The plant also embraces dynamo room, pattern and machine shops and office building. The capital stock is $20,000, and the concern will make steel castings, rolls and railroad castings. The officers of the Youngstown Steel Casting Company are: E. B. Lawrence, president; Thomas B. Vanalstine, vice-president; W. A. Palmer, secretary and manager, and J. W. Rogers, treasurer.

The torpedo boat destroyer "Hull" was successfully launched by the Harlan-Hollingsworth Company at their yards in Wilmington, Del., on the 21st inst. The "Hull" is a sister ship of the destroyer "Hopkins," launched by the above company a few weeks ago. Both these vessels are 245 feet long, 23-foot beam and have a draft of 6½ feet.

# The Iron Age

**New York, Thursday, June 26, 1902.**

DAVID WILLIAMS COMPANY, - - - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - - - ASSOCIATE EDITOR.
RICHARD R. WILLIAMS, - - - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - - - BUSINESS MANAGER.


## Reaction Against Municipal Ownership.

Municipal ownership of public utilities is not an untried experiment in this country. In fact, few cities or incorporated towns can be found in which some effort has not been made in this direction. Usually it takes the form of furnishing the water supply, but occasionally the municipality will also enter into the business of manufacturing gas or generating electric current for the use of the citizens. Latterly a strong sentiment has sprung up in favor of greatly extending the functions of municipal government by assuming the ownership of intramural means of passenger transportation. This sentiment has been largely cultivated by the socialistic propaganda, now active in all cities, and beginning to make itself felt politically. The apparent awakening of general interest in this subject makes it seem to be a new proposition for America. Nevertheless it is old enough to have developed some conspicuous failures, which should have had a sobering effect on the enthusiasts who favor municipal ownership as a great stride in the direction of the social millennium.

The strength of the arguments made by those who would have the management of gas, electric light, street railway and other public necessities vested in the city has hitherto largely been based upon the reports of low cost and high efficiency of the service secured in European cities in which this policy prevails. To such an extent has public ownership of public utilities been carried in Europe that it is termed municipal trading in contradistinction to enterprises conducted under private management. It must be acknowledged that the reports regarding such municipal trading have been uniformly favorable, but the success in Europe has been attributed by conservative writers to the great difference in the administration of civic affairs abroad and at home. For instance, street paving, street cleaning and garbage collecting are functions conducted by municipal governments in this country as well as abroad. Now, if municipal ownership in itself insured good results every American city should be as clean and as well paved as the average European city. It is unnecessary to ask if this is the case. It is further unnecessary to ask why it is not.

The reports now beginning to come from abroad are projecting discordant notes into the great chorus of praise of municipal trading. The most important development has occurred in London. Here an organization named the Industrial Freedom League has been formed to secure protection from the burdens which municipal ownership is imposing on the citizens. It is composed of wealthy and influential men, including noblemen, members of Parliament, manufacturers and merchants. They assert that they are being oppressed by what they term the injudicious course of the London authorities, claiming that a municipality cannot carry on the businesss of operating tramways and furnishing electric light and gas without extravagance because the boards or councils, drawn from all classes and ranks of society, attempt to conduct enterprises of which they have no knowledge. It is stated that until the South African War broke out Great Britain had been steadily reducing its national debt, the 20 years from 1879 to 1898 showing a reduction of about $650,000,000. On the other hand, during the same period, the debt of British municipalities had increased fully $750,000,000, with a further large increase since 1898. Inasmuch as the money must come out of the same pockets, whether taxes are levied to meet the debt charges of the nation or of municipalities, the object of the league is to check the growth of local indebtedness. A definite criticism of the policy of municipal trading is presented in the case of the tramways of London. Those in the north of London, which are leased to a company, are so well managed that a rental can be paid which not only provides interest and sinking fund upon cost, but leaves a substantial surplus amounting to upward of $200,000 per annum. The tramways in the south of London, worked by the London County Council, yield an insignificant profit. In other English towns the fares are deliberately put at so low a figure that actual loss results, so that the masses enjoy cheap transportation facilities for which the classes, the real taxpayers, must pay. It is highly probable that if all the facts were known regarding the administration of public utilities by European cities American advocates of municipal trading would not be able to paint such glowing pictures in support of that policy.

## Production of Pig Iron by Grades.

James M. Swank, general manager of the American Iron and Steel Association, has rendered the iron trade a great service in collecting the statistics of the production of pig iron according to the different grades. This information is for the first time embodied in the statistical report of the association just issued. For years this report has given the quantity of spiegeleisen and of Bessemer and basic pig iron annually produced, but it has always been a matter of conjecture as to how much of the remaining pig iron product consisted of foundry and how much of forge iron. Exact figures are now available. In collecting these statistics for 1901 care was taken to secure figures of production for 1900, so that a comparison can be made of the output of the several grades in these two years. The following table of total production of pig iron in the United States is taken from the report:

| Grades.—Gross tons. | 1900. | 1901. |
|---|---|---|
| Bessemer and low phosphorus | 7,978,209 | 9,589,936 |
| Basic | 1,072,376 | 1,448,850 |
| Forge | 793,092 | 639,134 |
| Foundry | 3,037,689 | 3,186,348 |
| Malleable Bessemer | 173,413 | 256,532 |
| Charcoal | 339,874 | 360,147 |
| White and mottled and miscellaneous | 129,909 | 97,374 |
| Spiegeleisen and ferromanganese | 255,977 | 291,461 |
| Direct Castings from furnace | 8,703 | 8,522 |
| Totals | 13,789,242 | 15,878,354 |

The classification here made is subject to some criticism with regard to charcoal iron, which does not constitute a special grade used for one distinct purpose. Like coke iron, it is of varying composition and finds its way into malleable foundries, car wheel foundries, foundries making very strong castings, basic steel works, Bessemer steel works and to some extent into rolling mill as forge iron. Hence, to be exact, a division should have been made of the charcoal product, but perhaps this was found impracticable.

Taking the figures as published, it was ascertained that in 1901 over 60 per cent. of the pig iron product was Bessemer and low phosphorus, over 20 per cent. foundry, over 9 per cent. basic, over 4 per cent. forge, over 2 per cent. charcoal, about 2 per cent. spiegeleisen and ferromanganese and 1.6 per cent. malleable Bes-

semer. Perhaps the most noteworthy fact clearly established by Mr. Swank's figures is that the great increase in the production of pig iron from 1900 to 1901 was practically confined to the grades used for the manufacture of steel, that there was only a slight increase in the production of foundry pig, and that the make of forge iron for puddling purposes fell off. The figures eloquently prove, too, to what a low point relatively the latter has fallen.

An interesting point in connection with this classification is that the production of malleable Bessemer falls below general expectation, even including a part of the charcoal iron product. The figures for foundry iron closely confirm the estimates which have heretofore been made relative to the extent of this branch of the pig iron trade. Following is a table for 1901, showing how the production of foundry, forge and malleable Bessemer, except charcoal, is distributed:

| States.—Gross tons. | Foundry. | Forge. | Mall. Bess. |
|---|---|---|---|
| New York | 214,835 | 12,596 | 10,705 |
| New Jersey | 50,898 | 31,548 | ..... |
| Pennsylvania | 845,309 | 313,740 | 61,073 |
| Maryland | 2,135 | 1,280 | ..... |
| Virginia | 328,795 | 34,121 | ..... |
| Kentucky | 66,475 | 1,987 | ..... |
| Tennessee | 321,140 | 9,638 | ..... |
| Alabama | 765,755 | 131,040 | ..... |
| Ohio | 426,152 | 91,922 | 69,480 |
| Illinois | 81,327 | ..... | 60,614 |
| Wisconsin | 83,527 | 638 | 54,660 |
| Missouri | ..... | 10,674 | ..... |
| Totals | 3,186,348 | 639,184 | 256,532 |

From these figures it will be seen that, while Pennsylvania is the leading State in the production of foundry iron, Alabama is a very good second, Ohio falls much in the rear as third, Virginia and Tennessee are close together and other States lag far behind them. The great producers of forge iron are Pennsylvania and Alabama. The showing for malleable Bessemer is rather surprising, as according to most estimates Illinois had been supposed to be in the lead. Ohio, however, stands first, Pennsylvania second and Illinois third.

## The Inadequate Capacity for Producing Structural Shapes.

The events of the past few months have emphasized in the most striking manner a fact which has not attracted the attention which it deserves, and that is that there has not been built for a number of years plant for rolling structural shapes. There has been intense activity bordering on the dangerous, in the expansion of facilities for producing other rolled products, but we do not know of a single new beam mill which has been put down since one of the works in the Pittsburgh district was enlarged. The apparent timidity displayed in this branch may be accounted for by the experience which manufacturers of structural shapes went through during the years of depression, but their experience was not exceptional by any means, nor was it characteristic of some of the makers in former years. We well remember that years since, when a leading concern put down a magnificent and costly mill, surprise was expressed at such a course when it was clear that the new plant alone could nearly cover the requirements of the country, which was even before its construction unable to absorb the product of the existing works. The head of the concern promptly replied that the growth of the demand would soon keep the new mill running to full capacity, and the events justified the prediction. In fact, the demand has now so far outstripped the capacity for manufacture that some older rolling mills have been remodeled to take care of a part of the tonnage, and yet deliveries are delayed for extraordinary periods and we find ourselves importing considerable quantities.

It is surprising that the opportunity offered by this field has not been seized earlier. Yet we find practically every new steel company organized during the past year ignoring this branch and turning to other lines, some of which are even now threatened with overproduction should the demand slacken but a little. It has been reported, although it is not officially confirmed, that the Lackawanna Steel Company will put down plant for rolling structural shapes at the new works at Buffalo, but beyond this somewhat vague rumor there has been no indication that we are to witness an expansion of the productive capacity along modern lines. It is apparent that it is sorely needed.

## The Proper Valuation of Pig Iron for Foundry Purposes

### Interesting Proposition to Furnacemen.

At the Boston convention of the American Foundrymen's Association last week, the secretary, Dr. Richard Moldenke, presented the following memorial:

The undersigned respectfully begs to memorialize the American Foundrymen's Association on behalf of a better method of valuing pig iron for foundry purposes than is at present in vogue.

As far back as our memories will carry us there have been made pig irons of good, indifferent and poor value, for the making of castings, and with few exceptions they have been sold on practically the same terms. In view of the fact that at the present time every effort is bent upon securing better material for our castings in order to hold the field cast iron is entitled to, it behooves us to devise some standard methods by which a poor iron may either be culled out, or else sold for its intrinsic value only. On the other hand, the maker of pig irons which have suffered least from careless burdening, improper mixing of ores with waste products, and other practices better known to the furnaceman, but not tending to good strength in the resulting pig, should be rewarded therefor accordingly.

It is a well-known circumstance to all founders that pig irons of the same shape, grade, and presumably the same composition, but coming from different furnaces, when remelted under as nearly the same conditions as possible will often show entirely different strengths. Those who have laboratories will know that this is even the case when the composition is approximately identical. For this reason it is somewhat of guess work to predict the strength of a casting from the composition of the irons used, and an element of doubt remains even with the best of mixing and manipulation.

Now that the Standardizing Bureau of our association has made such a splendid record in the course of bettering methods of foundry procedure, why not let it go one step further, and instruct it to devise methods by which we can better judge the value of the pig irons offered us?

As a starting point the following is suggested: The value to us of a pig iron is seen only in its remelted state, therefore to test it we must put it through cupola or furnace, and under conditions which will give it the fairest chance possible. Furthermore, the iron should be cast into test bars according to the standards provided for by this association. An analysis of the pig iron and the test bars, as well as the physical tests of the latter, can then be made, and we will know that a given iron when remelted and tested has such and such a strength for such and such a composition. We may then choose for our work, condemning the weak irons and selecting those which show promise of fulfilling the conditions required.

Since the furnaceman should have the means of valuing the iron he sells just as much as the foundryman who does the buying, it would be advisable that specifications be drawn up for a standard test cupola, standard methods of melting, pouring, &c., of a stated amount of pig iron. A suitable blank shall be drawn up in which

can be filled all the information necessary to properly value the iron.

Furthermore, it is suggested that, besides furnishing these standard methods to the trade for the individual use of any one who desires to obtain the information, facilities be given the Standardizing Bureau to take this matter in hand themselves for the benefit of those who do not care to go to the trouble of carrying out the process on the exact lines indicated. The bureau will then be in position to actually make the bars for test and prepare the samples for analysis. The bars can then be sent for test and the samples for analytical work to the laboratory specified, or in the absence of instructions, be turned over to an approved laboratory. A moderate charge should be made to cover the work done, and to make the undertaking self sustaining.

Should the plan here outlined prove feasible, the furnaceman who has good iron will find it a much easier matter to induce the prospective purchaser to try it. The foundryman, on the other hand, can buy the iron subject to the standard test, the results he wants of which he can demand guaranteed.

Gradually there will be a series of tests available which will serve to indicate the physical properties of a good iron of a given composition, when remelted, and we will hear less of inferior irons worrying the founder who has to furnish high grade castings. The undersigned would therefore offer the following:

*Resolved*, That the Committee on the Standardizing Bureau be requested to study the proper valuation of pig irons for foundry use, and, if possible, report standard methods therefor at the next convention.

In support of his memorial, Dr. Moldenke stated that the action suggested would be another step in the direction of scientific progress in the foundry trade. From the standpoint of the foundrymen it seemed to be desirable that a better method should be adopted of arriving at the proper valuation of pig iron than the present practice of trusting to the operation of ordinary commercial usage. The association approved Dr. Moldenke's views by adopting the resolution, and have therefore committed themselves to an effort to induce furnacemen to have their irons tested and graded. The task is a prodigious one. It is fraught with so many difficulties that it would seem at first blush to be impracticable. The plan proposed will undoubtedly excite a great deal of interest among manufacturers of foundry pig iron as well as commission merchants, and for the purpose of ascertaining the sentiment of the trade we have requested an expression of opinion from a number of leading furnace companies and pig iron merchants, and herewith present such replies as have been received up to the time of going to press:

### Opinions of the Trade.

Pilling & Crane, Philadelphia, say:

We have no doubt that the theory advanced is correct, and that its execution would produce many valuable results, but we do not consider that the deductions obtained would be as accurate as those obtained from the analysis of the pig iron itself, unless such results could be tabulated from a very large number of experiments. All foundrymen know that good pig iron will produce bad castings if improperly melted. Poor fuel, bad cupola practice and many other conditions will spoil the best brands of iron, and, on the contrary, skillful foundry practice will frequently overcome some defects in the pig, although, of course, such instances are more rare.

There are many valuable qualities desired from pig iron besides strength; fluidity, softness and cleanness being frequently even more necessary. Much of the trouble regarding analysis is due to the fact that the work is not carried far enough. Some foundries analyze for silicon as being the chief element, others analyze for sulphur or phosphorus, while perhaps a less number look for graphitic carbon, manganese, copper or other elements, which probably have as much influence upon foundry practice as the elements more commonly determined. No doubt the makers of strictly high grade pig would welcome the innovation, as it would demonstrate the superior qualities of their brands, but scientific furnacemen will no doubt recognize hidden dangers in the scheme unless the experiments are conducted under uniform conditions of fuel, cupola practice and other conditions well known to good foundrymen, and even then a large number of experiments would have to be made and the average obtained before intelligent reports could be made. The physical tests should be made for all desirable and undesirable qualities, including shrinkage, softness, clean and sharp surfaces, &c.

The time has certainly passed for grading of iron by fracture, and the introduction of chemistry is a long step in the right direction, but this test to be most valuable should be complete. The average foundry cannot be expected to be fitted up for these tests, and the blast furnace laboratory has been most frequently used for this purpose, and this research has led to the gradual improvement of many brands of iron which have proved satisfactory to the furnaceman without his knowledge as to why they were better than others. The intelligent blast furnace manager has, of course, aimed to make his brand acceptable by careful selection of materials and skillful practice, and such furnacemen have much to gain and nothing to lose by any system of analyses and physical tests which will make these good qualities manifest. On the other hand, many ordinary or inferior grades of pig iron now pass muster by being mixed in with better brands, thus showing approximately good results. These brands, if only partially analyzed, might show up as well as better brands, whereas a complete analysis would demonstrate the difference. All foundrymen realize that some irons not suitable for some work are sufficiently good for other purposes, and complete analyses of all brands would be valuable as a means of information for substitution of one brand for another. It should also be understood that in all cases a reasonable variation must always occur, and the lines of analyses and guarantees required should not be too closely drawn.

### The Tests Misleading to Ordinary Laymen.

M. A. Hanna & Co., Cleveland, Ohio, say:

While great strides have been made by the foundrymen of this country in the past ten years in their knowledge of the metallurgy of the foundry, as well as chemical knowledge of pig iron, we do not believe they are ready, at this time, to buy pig iron simply on chemical analysis, combined with a physical test for strength, basing the price they pay for the iron on such tests. While these tests would be of great interest and value to the technically educated foundry operator, they would be misleading in many respects to the ordinary laymen. The so-called weak irons would suffer by comparison, whereas they are valuable in many kinds of work in which fluidity and nonshrinking effect is desired; on the other hand, the irons of great strength, from the nature of their composition, would be put into castings where they would work much harm on account of shrinkage, causing internal strain and also hardness under the tool.

The weakness of such tests would be the total disregard as to softness and scrap carrying capacity of the different brands tested, and in many sections where scrap is cheap this question is of vital importance to the foundrymen.

There is much in the metallurgy of cast iron that would not be shown in such tests, and if elaborated to the extent of a full knowledge of the iron tested, would furnish figures only valuable at this time to the student of research. By this we mean carrying the tests to as full and complete microscopic examination as possible of the different forms of carbon by the best known methods of to-day. These tests for the varying conditions of carbon have been exploited by only a few experts and are little known by the vast majority of us.

### A Double Standard Objectionable.

James A. Green of Matthew Addy & Co., Cincinnati, says:

Dr. Moldenke's memorial is interesting as illustrating a scientific attempt to get away from the fetters of the rule of thumb which has so long prevailed in foundry practice. As I understand it, he proposes that all iron for foundry work be sold by a kind of double standard; first by analysis and then by its physical proper-

ties as shown by test bars. A double standard is a difficut thing to achieve. It is an economic fallacy when applied to a monetary system, and while it may work better in pig iron, yet there are so many practical difficulties in the way that it is to be doubted if the ironmaster—this generation, at least—will ever agree to it. Progressive ironmasters to-day are entirely willing to sell their iron by analysis. They will guarantee that the iron will run so and so in silicon, phosphorus, sulphur and manganese. Few of them will guarantee the total carbons, but this could be done if there were a great demand for it. Foundrymen, being able to buy the different irons going into their mixture by analysis, should be able to absolutely govern their results—that is, if chemistry means anything. But to ask the furnaceman to go a step further and guarantee test bars is asking one thing too much. No steel maker will sell by a double standard. The steel maker will, as far as the writer knows, guarantee either an analysis or a physical test, but not both.

Doubtless Dr. Moldenke's suggestion is the ideal solution of the problem, but it involves an amount of detailed labor that seems simple enough on paper, but which in actual experience would prove burdensome. It also apparently involves keeping the iron on the furnace yards, for probably only a few furnace plants could be fully equipped with all the apparatus necessary for the quick performance of the work he outlines. At a time like this, and these times bid fair to last, iron must be shipped out as fast as made, and any system that would hold it on furnaces yards would be intolerable.

It seems to the writer that as the ironmasters are willing to sell by analysis, which is an easy and practicable system, the problem should be solved along analytical lines. At all events any scheme that involves a double standard is open to many objections. The foundry trade is already partially educated to the analysis idea, and knowledge regarding it is rapidly spreading. The foundryman who buys by analysis can make his mixture on exact and scientific lines. He can largely eliminate chance.

In this connection possibly it might not be amiss to say that half the time iron is blamed for bad castings when probably the iron is in no respect at fault. Bad coke, tapping the cupola at too low or too high a heat, holding the iron too long in the ladle, and stupidity generally are common faults, but no matter what happens the foundryman always blames the iron. More light on foundry practice, as well as more light on pig iron, is needed.

---

**The United Steel Company.**—It is announced that the United Steel Company of Canton, Ohio, will shortly be incorporated with $500,000 capital stock to erect an open hearth furnace at Canton for the purpose of supplying the Carnahan Tin Plate & Sheet Company, the Structural Steel Company and other Canton concerns. Those chiefly interested are J. E. Carnahan, Edward Lengenbach, Joseph Biechele, W. W. Irwin and Wm. Blecker. It is stated there will be two open hearth furnaces with a capacity of 35 tons and a universal plate mill for rolling ingots and billets into sheet bars. The open hearth building will be 300 x 96, the plate mill 60 x 400, the gas producer house, with nine gas producers, 60 x 120, with a boiler and engine house and electrical plant to correspond. Ground will be broken at once and the plant will be ready about March 1, 1903.

---

The Wm. Cramp Ship & Engine Building Company, Philadelphia, Pa., successfully launched on the 21st inst. the new liner "Finland," in course of construction for the International Navigation Company. The "Finland" is a sister ship to the "Kroonland," which it is said was the largest built in this country, and which was launched on February 20, 1902. They are both twin screw vessels, 560 feet length over all, 42-foot depth of hold and a gross tonnage of 12,000 tons. These vessels were built particularly for the transatlantic passenger service; they are protected by 11 water tight bulkheads and have a cubic capacity for 11,000 tons of cargo.

# The Tin Plate Industry.

## Census Report for the Year 1900.

WASHINGTON, D. C., June 24, 1902.—The Census Bureau has completed an elaborate report upon the manufacture of tin and terne plates in the United States in the census year 1900, prepared by William G. Gray of Philadelphia, expert special agent for iron and steel. The returns show a capital of $6,790,047 invested in the tin and terne dipping industry by the 57 active establishments reported for the United States, but this sum represents only the value of land, buildings, machinery, tools and implements and the live capital utilized, and does not include the capital stock of any of the manufacturing corporations engaged in this industry. A majority of the establishments which manufactured tin or terne plates, or both, during the census year, also operated rolling mills, these mills being equipped for the production of the black plates which were coated with tin or with tin and lead in the tin dipping departments. At some plants, however, tinning pots had not been installed, and black plates or sheets were chiefly produced. Practically all the black plates made by establishments of the latter character were consumed by the tin dipping or stamping works of the country. There were 44 establishments engaged in the production of black plates during 1900, employing a capital of $20,698,255. Combining the two branches of the industry the total capital employed was $27,488,302; the total wages, $10,288,061; the cost of materials, $45,004,716, and the value of products, $61,912,619.

While it might appear that because 57 establishments were reported in the tin and terne dipping industry and 44 in the manufacture of black plate, there were, therefore, 101 establishments in the combined industries, this was not the case, since establishments which performed both operations—namely, the manufacture of black plates and the dipping of these plates—would thus be counted twice. As a matter of fact, there were 35 active dipping establishments which were equipped also for the manufacture of black plates, and in addition there were 22 active plants equipped for tin and terne dipping only, and nine plants equipped for the manufacture of black plates only, or a total of 66 active plants. The items given as the cost of materials in the combined industry include a duplication of $20,590,566, being the value of black plates reported by that branch of the industry and used as material in the tin and terne dipping mills. Similarly, in order to obtain a true total value of products it is necessary to deduct from the total value of products shown for the combined industries the value of the black plates produced by the black plate establishments and used as material in the tin and terne dipping establishments. In this manner it is found that the total value of the products of the combined industries was approximately $41,322,053. In this total, however, there are included products other than black plates or tin and terne plates, valued at $9,660,669.

In these calculations it is assumed that the domestic black plates consumed by the tin and terne plate plants were all produced during the census year. Of course this is not the fact, as a considerable part of the black plates consumed by tin and terne plate plants in the early part of the census year was drawn from stock made in the previous year, while a large part of the black plates produced by domestic mills toward the close of the census year was still in stock, not having been forwarded to the tin and terne plate plants. The figures for cost of materials and value of products for the combined industries are not, therefore, altogether exact. They are, however, approximately correct and give a fair idea of the importance of the combined industries during the census year.

### Tin and Terne Plates.

The materials employed in the tin and terne dipping industry during 1900 were as follows: Domestic black plates, 825,566,992 pounds, valued at $20,590,566; foreign black plates, 2,358,607 pounds, valued at $78,288; pig tin, 20,282,778 pounds, valued at $4,528,173; pig lead, 6,871,480 pounds, valued at $398,617; palm oil, 5,511,645

pounds, valued at $282,227; sulphuric acid, tinning flux, bran and pink meal, $187,318; boxes and nails, $303,316; all other materials, $269,351; total, $26,728,150. From these figures it appears that aside from black plates, which amount to 77.3 per cent. of the total cost of the materials used, pig tin and pig lead were the most important items. It is also seen that the use of foreign black plates, which was confined to the States of Pennsylvania and Virginia, was very small compared with the use of domestic black plates and sheets. Bituminous coal and slack and natural gas were the most important fuels used in the order named. Nineteen establishments employed natural gas for fuel in whole or in part. The total output for the census year was returned at 707,718,239 pounds of tin plates, valued at $25,553,021, and 141,285,783 pounds of terne plates, valued at $5,731,124. The total production of the industry was increased by small quantities of other articles valued at $607,866.

A number of the dipping plants run on single turn only, each turn being, on an average, ten hours. At other plants, however, especially those which produce their own black plates, double and triple turn is the practice, two and three sets of skilled workmen being employed. Based upon double turn the capacity of the completed works for tin plates alone, including the two idle plants, was 4,037,076 pounds daily, or allowing 300 working days for each year, 1,211,122,800 pounds annually, and for terne plates, 1,482,726 pounds daily, or 444,817,800 pounds annually. The total yearly capacity for the two products on double turn is thus found to be 1,655,940,600 pounds. These capacities are, of course, largely theoretical, as it would be almost a physical impossibility to operate all the tinning sets in the country at the same time and on double turn.

In summarizing the statistics of the industry by States it appears that the bureau has followed the rule that in cases where less than three plants were located within a State, or where all the plants in the State were operated by an individual company, the statistics should be included with those for another State. There were 25 establishments in Pennsylvania engaged in the tin and terne dipping industry, with an aggregate capital of $3,042,029. The average number of wage earners employed was 1578. The products included 256,879,332 pounds of tin plates, 77,129,648 pounds of terne plates and 200,473 pounds of other sheet iron or sheet steel, tinned or terne plated. Pennsylvania apparently enjoys the distinction of being the only State from which tin and terne plates were exported by the manufacturers during the census year. The quantity reported was 17,939 pounds, valued at $897.

Since the establishments in operation in Indiana were all under the management of a single company, the statistics of capital invested, the cost of materials used and the value of products have been included with similar data for the State of Illinois. All the five Indiana establishments produced both tin and terne plates. In reaching a total for the establishments in the State, each of the five plants operated by the single company above referred to has been counted as one establishment. The average number of wage earners employed during the year was 572. Indiana was the only State which used natural gas exclusively for fuel in the manufacture of tin and terne plates during the census year, not one of the five establishments reporting the consumption of a single ton of coal. During the census year there were three establishments in Illinois engaged in the tin dipping industry. Terne plates were not made. The average number of wage earners employed during the year was 166. The capital invested in the eight tin and terne plate plants in Indiana and Illinois was $1,117,184. The products included 231,992,162 pounds of tin and terne plates and 800,000 pounds of other sheet iron or sheet steel, tinned or terne plated.

There were 12 completed tin and terne dipping establishments in Ohio at the close of the census year, with a total capital of $1,203,265. The average number of wage earners employed during the year was 697. The products included 132,163,383 pounds of tin plates and 30,146,921 pounds of terne plates.

As Maryland and West Virginia had each only two tin and terne dipping establishments in operation during the census year, it is necessary to combine the data for the two States to avoid disclosing the operations of individual establishments. The four establishments located in these two States reported a total capital of $586,182. The average number of wage earners employed was 274. The product was 67,721,725 pounds of tin and terne plates. The establishments in Maryland made tin plates only.

During the census year there were four tin and terne dipping establishments in operation in the State of New York, with an aggregate capital of $245,579. The average number of wage earners employed during the year was 55. The products included 5,591,050 pounds of tin plates and 3,900,000 pounds of terne plates.

In each of the States of Virginia, Kentucky, Michigan and Missouri only one tin or terne plate plant was in operation during the census year. The total capital reported was $1,050,067. The average number of wage earners employed during the year was 329. The products included 43,479,801 pounds of tin and terne plates—mostly in tin plates. The Michigan establishment consumed their entire product in their own works in the manufacture of various specialties. Virginia and Kentucky made terne plates only and Michigan and Missouri made tin plates only.

### Black Plates.

The materials consumed in the black plate industry were valued at $18,276,566 and included iron ore, 1035 tons; pig iron, spiegeleisen and ferromanganese, 16,514 tons; scrap iron, 34,422 tons; iron or steel ingots, blooms, billets, tin plate bars, &c., 648,807 tons; fuel, $869,070; all other materials, $2,643,358.

More than nine-tenths of the black plates manufactured were made from Bessemer steel and less than one-tenth from open hearth steel. The average value of all kinds of black plates for tinning was $53.21 per ton. Changing gross tons to pounds, it appears that the total production of Bessemer and open hearth steel black plates in 1900 was 882,591,360 pounds, of which 795,372,480 pounds were Bessemer steel and 87,218,880 pounds were open hearth steel. These figures do not include the 79,096 tons of plates and sheets other than black produced by black plate mills during the census year.

Pennsylvania ranked first in the production of Bessemer steel black plates during the census year, producing almost one-half of the total quantity. Indiana was second, Ohio third and West Virginia fourth. These four States made over 96 per cent. of the total production of Bessemer steel black plates. Pennsylvania, Ohio and West Virginia also produced almost all of the 79,096 tons of other plates and sheets reported above, Ohio ranking first, Pennsylvania second and West Virginia third. In the production of open hearth steel black plates Missouri ranked first, Pennsylvania second, Illinois third and Ohio fourth. These four States produced over 96 per cent. of the total production of open hearth plates.

The returns show that there were 355 completed and building hot black plate mills located in the 44 active and three building establishments. Of these mills 332 were completed and 23 were building. The total annual capacity of all the hot mills, both completed and building, was 692,725 gross tons of finished black plates. The completed mills had a capacity of 641,450 tons and the building mills a capacity of 51,275 tons. The number of cold mills was 308, of which 294 were completed and 14 were building. The hot and cold mills in course of construction were located in Pennsylvania, Ohio and Michigan.

In point of equipment and capacity Pennsylvania was first with 170 hot mills (160 completed and ten building) and 162 cold mills (157 completed and five building). The hot mills had an annual capacity of 340,575 gross tons of finished black plates (completed mills, 314,325 tons, and building mills, 26,250 tons). Ohio was second with 68 hot mills (59 completed and nine building), having an annual capacity of 131,850 tons of black plates (completed mills, 114,525 tons, and building mills, 17,325 tons), and 63 cold mills (58 completed and five building). Indiana was third with 53 completed hot mills, having an annual capacity of 102,025 tons, and 38 cold

mills. Illinois was fourth with 28 completed hot mills, with an annual capacity of 50,700 tons of black plates, and 12 cold mills. None of the other States named in the table had more than 14 hot mills or an annual capacity exceeding 28,000 tons of finished black plate.

W. L. C.

# MANUFACTURING.

### Iron and Steel.

The new plant of the Griffiths Charcoal Iron Mill, at Washington, Pa., is nearly completed and will probably be in operation by July 15. This plant is equipped with forges, hammers, bar mill and tin mills for making tin plate and terne plate from a charcoal iron base.

The Lake Shore Steel & Wire Company of Miles Grove, Pa., have been granted a charter with a nominal capital of $1000.

The Brown-Bonnell, Valley and Haselton works of the Republic Iron & Steel Company, at Youngstown, Ohio, will close down on June 28 and will not resume operations until July 14. During the shut down repairs and improvements will be made.

At a meeting of the stockholders of the Burden Iron Company June 18, the following directors were elected: James A. Burden, I. Townsend Burden, John L. Arts, James A. Burden, Jr., Williams P. Burden and Arthur S. Burden. A certificate was filed with the Secretary of State stating that the number of directors of the company had been increased from five to six. At a subsequent meeting of the directors the following were chosen: President, James A. Burden; vice-president, James A. Burden, Jr.; general manager, John L. Arts; secretary, Nicholas J. Gable.

The management of the Greer and Shenango works of the American Tin Plate Company, at New Castle, Pa., has given notice that these plants will probably be operated right through the summer months and that there will be no vacations allowed to the employees.

The Tyler Tube & Pipe Company of Washington, Pa., have signed the Amalgamated Association scale.

The Inland Steel Company, Chicago, have fires lighted, drying out the open hearth furnaces, preparatory to starting the plant about August 1.

The Union Steel Company, Frick Building, Pittsburgh, have started active work on their blast furnaces at Donora, Pa., although not a great deal has been done as yet. There has been considerable furnace work done on the open hearth plant and complete plans have been made for four 600-ton blast furnaces, although but two are under construction. The Union Steel Company have made complete plans for 24 open hearth steel furnaces, but only 12 will be built at this time. The wire rod, wire and wire nail mills are in full operation. The steel frame building containing open hearth furnaces will be 1120 feet long and 240 feet wide. The Union Steel Company within the last couple of weeks have largely increased their holdings of ore products in the Mesaba region and now have sufficient ore in sight to run their blast furnaces for many years.

At the Laughlin Works of the American Tin Plate Company, at Martins Ferry, Ohio, 15 mills are being operated. This is the second largest individual tin plate plant owned by the American Tin Plate Company.

The report that the Fort Pitt Iron & Steel Company of Pittsburgh had bought the property of the Eastern Rolling Mill Company in Pittsburgh, which the former concern operate under lease, is untrue. The lease of the Fort Pitt Iron & Steel Company for this works has some time to run yet, but the firm have not bought the property. The output of the plant is muck bar and iron skelp.

H. M. Williams & Co., Attleboro, Mass., makers of seamless wire, rolled plate and tubing, are erecting a new plant to consist of a main building, 50 x 193 feet, two stories, of mill construction, and a brick power house, 42 x 60 feet. A 100 horse-power Harris Corliss engine and two Stirling boilers of 75 horse-power each will be installed. They expect to have the plant ready for occupancy by October.

The hot and cold mills in the Falcon Works of the American Sheet Steel Company, at Niles, Ohio, are being removed to the Struthers Works of that concern, at Struthers, Ohio. The puddling and skelp mills in the Falcon Works will be allowed to remain there and will probably be operated by the American Steel Hoop Company, but it is possible the skelp department may be operated by the Republic Iron & Steel Company.

The advance of 10 per cent. in wages recently made by Jones & Laughlins, Limited, of the American Iron & Steel Works, and the Eliza furnaces at Pittsburgh, embraced the following: All day laborers were advanced from $1.35 to $1.50 per day, and all other workmen, including blast furnace labor, were advanced 10 per cent., except tonnage and piece workers and workmen in polishing, chain, roll and structural shops, who had some time ago secured an advance in wages.

The report that Jones & Laughlins, Limited, of the American Iron & Steel Works, at Pittsburgh, had bought the property of the Keystone Rolling Mill Company and would use the ground for storage yard, is untrue.

The United Engineering & Foundry Company of Pittsburgh have received a contract from the Youngstown Mfg. Company, Youngstown, Ohio, makers of nuts, bolts and rivets, for the building of a 16-inch roughing and 10-inch finishing mills. The mills will be built at the Lloyd-Booth Department of the United Engineering & Foundry Company, at Youngstown, Ohio, and will roll material to be cut up into nuts, bolts and rivets by the Youngstown Mfg. Company.

The Toledo Tube Company of Toledo, Ohio, have purchased a tract adjoining their plant and will erect a large sheet mill. They will roll their own plates for use in the manufacture of shovels and bicycle tubing. They expect to be in the plant about December 1.

The Bostwick Steel Lath Company of Niles, Ohio, have placed a contract for the erection of a new plant, which will increase their facilities considerably. Considerable new machinery will be purchased. The company held their annual meeting a few days ago and declared the usual 5 per cent. semi-annual dividend. Officers were chosen as follows: W. G. Huribert, president and treasurer; J. O. Hart, vice-president; E. J. Job, secretary.

The Garrett-Cromwell Engineering Company, Cleveland, Ohio, have taken a contract to build an open hearth steel plant of two 25-ton furnaces for the Ohio Steel & Iron Specialty Company, Cuyahoga Falls, Ohio, manufacturers of hollow and solid stay bolts, angles, &c. They have just closed contracts for a portion of the equipment for the plant of the Detroit Iron & Steel Company's blast furnace, for which they are engineers, as follows: Blowing engines, Wm. Tod & Co., Youngstown; boilers, Aultman & Taylor Company, Mansfield, Ohio, and structural iron work, trestles, &c., Riter-Conley Company, Pittsburgh.

The Baltimore Rolling Mill Company, Baltimore, Md., have started upon the erection of their rolling mill at Canton. The building will be of three spans, 51 feet each and 352 feet long. The product will be bar iron.

The Columbus Iron & Steel Company, Columbus, Ohio, have let contracts for an addition to their plant. Four sets of boilers and a large blowing engine have been contracted for.

Ground has been broken for the new furnace of the Cleveland Furnace Company, Cleveland. Contracts for the structures and equipment will be closed at once.

Corrigan, McKinney & Co. of Cleveland, Ohio, have taken a lease of Charlotte Furnace, at Charlotte, Monroe County, N. Y., and will operate it on foundry iron. This furnace is 65 x 15 feet and was active in 1900, but has since been idle.

The Wallis & Carley Company of Sharon, Pa., are building a new engine house at Fannie Furnace of Perkins & Co., Limited, at West Middlesex, Pa. A new blowing engine will be installed at the furnace and other improvements made.

### General Machinery.

Considerable new equipment will be required by the recently organized Minneapolis Implement Company, Minneapolis, Minn., who will erect a new plant for the manufacture of harrows, cultivators, and small agricultural implements, plans for which are not yet completed. The officers are: J. M. Bowler, president; John Beutner, vice-president; A. L. Cramb, second vice-president, and James Rooney, secretary and treasurer.

The R. K. Le Blond Machine Tool Company, Cincinnati, Ohio, are enlarging their engine room and adding a blacksmith shop to their plant.

The Thornton Machinery Company, 39 Exchange place, Providence, R. I., dealers in machinery and supplies, have incorporated with a capital stock of $10,000. J. T. Thornton is general manager.

The Trump Brothers Machine Company, Wilmington, Del., will enlarge their plant by the erection of several substantial additions.

The Hyle Brothers Steel Company, Syracuse, N. Y., manufacturers of dies, taps, pipe cutters, tube expanders, &c., have under consideration the erection of a new plant and an increase of the capital stock to $2,000,000 or $3,000,000. A site of 10 acres has been practically settled upon, but nothing definite will be decided until after the meeting in July.

Baugher, Kurtz & Co., Limited, York, Pa., founders and machinists, have just completed for the Shenandoah Powder Company, Shenandoah, Pa., a set of glaze and mixing barrels, with all necessary machinery, to replace that part of their plant recently destroyed by an explosion.

The Bellows Falls Machine Company, Bellows Falls, Vt., founders and machinists, have been reorganized with the following officers and directors: Frederick H. Babbitt, president; George H. Babbitt, vice-president; John E. Babbitt, treasurer and manager; Preston H. Hadley and George R. Wales. The new management will extend the business and increase the efficiency of the plant by the installation of new and improved machinery.

The Anderson Foundry & Machine Works, Anderson, Ind., have received the contract for the tin machinery house, also a 60 x 60 inch pickler, for the Juniata Steel & Iron Company of Greencastle, Ind., who are erecting a six-mill plant and expect to be in operation about October.

Phillips Pressed Steel Company at Joliet, Ill., have been organized with a capital of $25,000 for the manufacture of ma-

chinery. Grant Houston, Charles H. Garnsey and Augustus Knox are the incorporators.

The Union Iron Works is the name of a new company, organized in South McAlester, Oklahoma recently, with a capital of $25,000. Following are the directors of the company: D. R. Lewis, Tal Milwee, L. W. Bryan, Frank Smith, and J. H. Gordon.

The West Allis Chain Belt Company of West Allis, Wis., recently organized, have elected the following officers: O. L. Hollister, president; C. S. Otjen, vice-president; W. H. Shenners, secretary, and Charles F. P. Pullen, treasurer. George F. von Spreckelsen has been appointed manager, and George Giessen, superintendent. The company have purchased a tract of land of 10 acres in West Allis upon which they will erect a plant. The grading for the shops is now under way. They expect to have the plant in full operation not later than October. The cost of buildings will be about $65,000.

The Colborn Machine Tool Company, Franklin, Pa., expect their new buildings to be completed and machinery installed and running early in September.

The Riter-Conley Mfg. Company of Pittsburgh, Pa., have recently decided to adopt alternating current motors exclusively for power distribution. They have purchased three 200-kw. engine type Westinghouse generators, which are to be direct connected to Westinghouse gas engines using natural gas. Alternating currents will be used for all work, including cranes, and a number of Westinghouse type "F" induction motors will be geared directly to straightening rolls.

The name of the firm of H. G. Barr & Co., Worcester, Mass., manufacturers of upright drills, universal tool grinders and special machinery, has been changed to H. G. Barr, and the business removed from 51 Union street to Winona and Nebraska streets. The new shop is 265 feet long, and has much greater facilities than the old one.

The firm of Philip H. Gill & Sons, Brooklyn, N. Y., machine, millwright, sheet metal and forge work, have incorporated under the name of the P. H. Gill Forge & Machine Works. The management and line of work done will continue the same as heretofore.

The Cortland Corundrum Wheel Company, Cortland, N. Y., are enlarging their works, recently established, by the addition of a two-story and basement building, 40 x 75 feet. Two more kilns are being installed, and other improvements in the way of additional machinery are being made.

The Cape Ann Machine Company, Gloucester, Mass., recently organized, have fitted up a new plant with the product of the American Tool Company, furnished by Chandler & Farquhar of Boston. The company will manufacture steam stationary engines and do general machine work. Benjamin A. Smith is president and Robert Reid treasurer.

The National Iron Works, Duluth, Minn., manufacturers of machinery, engines and pumps, have leased the Iron Bay Works, which they will occupy July 1, instead of building a new plant, as was originally intended. The plant comprises a main building, 130 x 250 feet, two stories, with an L 75 x 225 feet, and two large annexes, and is fully equipped. The machinery in the different buildings will be rearranged and that of the old plant will be removed to the new quarters. A large steam hammer, which has been purchased, will be installed, and a number of improvements made preparatory to manufacturing on a larger scale than heretofore.

The Cincinnati Shaper Company, Cincinnati, Ohio, whose present works are at Sycamore and Webster streets, have secured a site of 3½ acres south of Shop No. 2 of the Lodge & Shipley Machine Tool Company, upon which they will erect a new plant, 91 x 293 feet, with boiler and engine house, 40 x 75 feet, attached. The building will be of the three-bay construction and equipped throughout with modern machinery, all of which, including a 125 horse-power engine and a 175 horse-power boiler, has been purchased. The bays are to be 30 feet each, the middle one being served by a traveling crane. The side bays will contain the machines. The office and drafting room will be located on the second floor and will be 30 x 90 feet. The company will have a much larger output in their new plant, which is expected to be ready for operation by October.

Punches, shears, rolls, air compressor, bolt cutting and heading machinery, bulldozers, &c., are required by the Wichita Bridge & Iron Company of Wichita, Kans., who were recently incorporated with a paid in capital of $25,000. The company have absorbed the old Wichita Bridge Company and the Wichita Mfg. Company, and are using the plant of the latter, a two-story brick building 40 x 140 feet, as a machine shop. They have also purchased the Globe Iron Works, adjacent to the machine shop, which they will use as a foundry. The plant will be equipped throughout with modern machinery, and enlarged by a substantial addition, plans for which are now under way.

The Jacobson Machine Mfg. Company, Warren Pa., manufacturers of air compressors, gas regulators, gas soldering furnaces, friction clutch pulleys and vises, are putting the Universal friction swivel machinists' vise on the market. Since the first of the year they have succeeded in placing them with houses in 100 cities of the country. Among these are the Niles Tool Works Company, National Cash Register Company, the Pennsylvania Railroad Company, and the General Electric Company. In Cincinnati sales have been made to upward of 20 firms; Buffalo, N. Y., 20 firms; Erie, Pa., 20 firms; Williamsport, Pa., 20 firms. In Boston, Mass., the Cutter Wood & Stevens Company have become their agents. The company have recently put into the Warren Street Railway power station at Stoneton all the power transmission machinery. They are now building a 42-inch friction cut-off coupling for Boston parties to develop from 500 to 750 horse-power, to run 375 revolutions a minute. The business of the company in all their different lines keeps increasing, and to meet the requirements of this new machinery to the amount of about $15,000 has been added to the plant within the last three months.

The Franklin Portable Crane & Hoist Company, Franklin, Pa., are having a good demand for their cranes and hoists from all branches of manufacture. They have been placing its features under notice of the railroads of the country. Already it has been approved by five to six with business results. The manufacturing facilities of the company are stretched to the utmost to fill orders. They have recently added a larger size of the crane than any made heretofore.

The Electrical Equipment Company, suite 939 Monadnock Block, Chicago, have been awarded a contract for the complete installation of an electrical transmission plant, located on the St. Joe River, at Constantine, Mich. The equipment includes six 400 horse-power and two 60 horse-power water wheels, to operate under a 12-foot head. The main drive will be divided into two sections, with three of the larger wheels geared to each shaft, which is direct connected to a 600-kw. revolving field, alternating current, generator. Each of the small wheels will be direct connected to a 30-kw. direct current generator to furnish exciting current to the generators. In addition to furnishing power for manufacturing purposes. The commercial and city lighting of Constantine, Three Rivers and White Pigeon will be operated from this plant. Several new industries, including a calcium carbide plant, will be located at Constantine to utilize the power. The plant will be ready for operation by December.

The Continental Iron Works of Brooklyn, N. Y., have recently purchased from the Westinghouse Electric & Mfg. Company considerable additions to their electrical equipment, including a 180-kw., 220-volt, 60-cycle, two-phase alternator, a 5-panel switchboard, 11 inductor motors of from 5 to 20 horse-power each, with the accompanying autostarters. The company some time ago installed alternators of 120 kw. and 45 kw. each, and of the same characteristics as the above. They also have quite a number of induction motors in use driving corrugating and bending rolls for making Morrison fire boxes, also driving fans, shears, tools in the machine shop, &c.

The Winton Motor Carriage Company, Cleveland, Ohio, are closing contracts for much of the new machinery to be used in their new plant now under construction. The machine shop will be occupied in about 60 days. They have ordered eight large screw machines from Bardons & Oliver, Cleveland; three Brown & Sharpe universal automatic gear cutters and a number of pieces of wood working machinery from Strong, Carlisle & Hammond, Cleveland; a horizontal boring mill and a large power press from the Lucas Machine Tool Company, Cleveland; two Becker-Brainard vertical milling machines and a Landis grinder from the Marshall & Huschart Machinery Company, and a large turret lathe for turning fly wheels from the Gisholt Machine Company. They are in the market for additional milling machines and turret lathes. They have placed a contract with Harvey & Sons, Chicago, for an Acme gas plant, with which they will operate their brass foundry and forge shop; also furnishing power for six 50 horse-power Winton gas engines, which will drive all machinery in the plant.

The Warner & Swasey Company, Cleveland, Ohio, have leased the factory adjoining their plant, formerly occupied by the General Incandescent Lamp Company, and will equip it with machinery as an addition to their plant. Later they expect to erect a large permanent addition. They report that the machine tool business is heavier than ever before, and they are considerably behind on orders. Their foreign business is considerably heavier than last year and orders from Germany and England are growing more numerous. They are very busy in their telescope department. They are building a 15-inch telescope for the Boys' High School, Philadelphia, and a large photographic telescope for a Japanese observatory.

Foot, Burt & Co., Cleveland, Ohio, manufacturers of multiple drills, are rapidly completing their new factory. They will buy considerable new equipment after they are settled and find their bearings. The main building is 55 x 155 feet, three stories.

The new plant of the American Foundry & Machine Works at Ravenna, Ohio, will commence operations about July 1. The foundry building is 140 x 75 feet, machine shop 84 x 140 feet, with boiler and engine rooms and blacksmith shop 30 x 36 feet. Other buildings will be erected in the near future. They have recently bought large quantities of material.

The Canton Foundry & Machine Company, Canton, Ohio, have completed plans for a three-story 50 x 150 foot addition to their plant. Contracts will be closed at once.

The Alden Rubber Company, Barberton, Ohio, will add a machine shop and do their own repair work. A building will be erected for the purpose.

The Toledo Machine Tool Company, Toledo, Ohio, have just

completed a punch press weighing over 100,000 pounds. It went to a concern in Western Pennsylvania.

The Middletown Machine Company, Middletown, Ohio, have placed a contract for an addition to their plant to be 65 x 250 feet, and two stories high. They will install considerable new machinery.

**Boilers, Engines, &c.**

The Dellenbach Gas Engine Company of Pittsburgh have been granted a charter with a nominal capital of $1600. They are building a plant near Pittsburgh for the manufacture of gas engines.

The Ridgway Dynamo & Engine Company, Ridgway, Pa., have an abundance of work and despite increase in equipment during this year orders keep ahead, so that further extensions will be required.

The business of Hibbard Brothers, Sandy Hill, N. Y., manufacturers of gas engines, wood cogs, &c., has been incorporated under the name of the Hibbard Gas Engine Company. The new company will enlarge the plant and will also manufacture a new valve for pulp machines, which will soon be placed on the market.

P. A. Clum & Co., Rochester, N. Y., brass founders and manufacturers, will require an engine and boiler for their proposed new plant.

The Globe Iron Works Company, Minneapolis, Minn., manufacturers of White gasoline engines, have recently added 100 feet to the length of their shop and installed a new Jones & Lamson flat turret lathe and three engine lathes. They have also erected a two-story building 44 feet square, devoted exclusively to their marine business. They have recently put on the market a deep well pumping engine and a three-cylinder marine engine of 16 horse-power, which weighs 850 pounds. The company have shipped two carloads of engines to New Zealand this season and are working on a third.

The Vilter Mfg. Company, Milwaukee, Wis., have closed contracts with parties in New Hampshire, Missouri, California, Pennsylvania, Kansas, Tennessee, Ohio and Iowa for a number of their refrigerating machines and ice plants, including one 150-ton, one 125-ton, one 75-ton, two 35-ton and one 25-ton. Recent orders also include two 9 x 18 ammonia compressors for Ruston, La.; one 9 x 18 ammonia compressor for Monticello, Ark.; a 6-coil ammonia condenser for Youngstown, Ohio; 15-ton ice tank for Carnegie, Pa.; 1-ton ice tank, &c., for Bisbee, Ariz., and direct expansion piping for Mankato, Minn. Engine sales include a 16 x 30 x 42 cross compound Corliss engine to National Knitting Company, Milwaukee, Wis.; 14 x 36 Corliss engine to Fairbanks, Morse & Co., Beloit, Wis.; 14 x 30 Corliss engine to Chicago Flexible Shaft Company, Chicago, Ill.; 15 x 28½ x 36 cross compound Corliss engine to Buda Foundry & Mfg. Company, Harvey, Ill.; one 28 x 48, one 24 x 42, one 22 x 42, six 17 x 42, one 18 x 42, one 20 x 42, one 18 x 36 twin, three 15 x 36, three 16 x 36, one 14 x 30 and one 10 x 24 Corliss engine to parties throughout the country.

The Manitowoc Steam Boiler Works, Manitowoc, Wis., intend to erect a large boiler plant adjacent to their present works, plans for which are now under way.

The Pittsburgh Gage & Supply Company, Pittsburgh, Pa., have secured through Victor Beutner, engineer, an order for one pair 600 horse-power Brown-Corliss twin engines, to drive direct connected electric generators in the new mill of the Susquehanna Iron & Steel Company, Lancaster, Pa. They have also secured an order for a complete White Star filtering system for the new plant of the West Moreland Light & Power Company, Greensburg, Pa., and one from the Hooven, Owens & Rentschler Company of Hamilton, Ohio, for supplying two cross compound engines of their manufacture with a White Star filtering system. These engines are destined for the power plant of the Cincinnati, Georgetown & Portsmouth Railway Company.

The strike at the Warren Boiler Works, at Warren, Ohio, has been settled on terms satisfactory to both sides and work has been resumed.

The Titusville Iron Company, Titusville, Pa., are erecting a new boiler shop, 200 x 421 feet, of steel and brick. Part of the machinery of the old shop will be installed and a considerable amount of new equipment, including one 20, one 15 and two 5 ton overhead cranes, two hydraulic cranes, a variety of punches and pneumatic tools of different kinds. The old boiler shop will be used as the foundry, and the present foundry, which is in the same building as the machine shop, will be made an extension of it. The addition will increase the boiler manufacturing capacity four fold and about double that of the other departments. The enlarged works are expected to be in full running at the beginning of 1903.

The Home Electric Light & Power Company, organized at Fremont, Ohio, have secured a local franchise and will at once purchase equipment to operate a modern electric light and power plant.

The Eastern Heating & Lighting Company of Columbus, Ohio, will erect a power plant in that city and furnish light, heat and power in the residence portion of the city. Plans for the plant have been prepared by W. T. Mills.

Trustees of Erie County Children's Home, Sandusky, Ohio, have had plans prepared for a power house and tunnel. Equipment will be installed for lighting and heating the Home.

Thomas Dunmore and associates have secured a steam heating franchise at Norwalk, Ohio, and will erect a plant to produce steam heat and hot water.

The Marion Ice & Cold Storage Company, Marion, Ohio, have ordered a 20-ton ice machine from the Henry Vogt Machine Company of Louisville, Ky. A new building will be erected and a power equipment installed.

**Foundries.**

The Catawissa Car & Foundry Company, Catawissa, Pa., recently incorporated with a capital stock of $10,000, have purchased the plants of the Hamlin Car & Wheel Mfg. Company, which they are now operating. They manufacture general car, mine, construction and machine castings, forgings, flat mine and dump cars. The officers are W. H. Rhawn, president; Chas. E. Randall, secretary, and J. K. Sharpless, treasurer.

The strike of the Buhl Malleable Company of Grand Rapids, Mich., has been settled, and the plant will be opened as soon as possible.

The Matthews Steel Casting Company have begun the construction of their buildings at Matthews, Ind., and expect to be in operation by fall or winter. The main building will be 62 x 300 feet and 30 feet high; engine room 30 x 61 feet. The sand houses, furnace sheds, drying ovens and pattern shops will all be located on either side of the main building in a manner to make it most convenient. The plant will be electrically equipped throughout, having direct connected engines with generators. The output will be about 30 tons daily. Natural gas will be used as fuel.

A traveling crane, engine and boiler will be required by P. A. Clum & Co., Rochester, N. Y., brass founders and manufacturers, for their new foundry, 100 x 329 feet, plans for which are completed. The building will be of mill construction, located on the New York Central & Hudson River Railroad tracks, and will have twice the capacity of the present one. The office will be in a separate building, but connected with the main building by a passageway.

The Reading Foundry Company, Reading, Pa., will shortly begin the erection of a new foundry, machine shop, pattern shop, storage house, power house, office and other buildings on the site now occupied by the pipe foundry in North Reading, removing the present plant from Third and Chestnut streets in the fall, at which time it is expected the new quarters will be completed. Peter T. Wanner has retired as general manager after filling the position for nearly 20 years. He is succeeded by Oliver S. Ticer of New York, but retains his place in the Board of Governors and is the vice-president of the company.

Charles Brunner, Peru, Ill., manufacturer of railroad and wagon scales, engines, boilers, &c., will re-equip his foundry, 60 x 200 feet, which was recently damaged by fire. The plant, consisting of a machine shop, boiler shop and foundry, was a new one, having only been occupied three months when the fire occurred.

The new plant of the Railway Steel Casting Company, recently organized at Pittsburgh, which was to have been built at Tarentum, Pa., will be located at some other place. It is possible the new works will be built in the vicinity of New Castle, Pa.

The Gray-Blaisdell Company, Bradford, Pa., are about building a foundry 150 x 100 feet. In it there will be a 20-ton traveling crane, 50 feet span, and two cupolas to make 20-ton castings. It will be fitted with electric power, heat and ventilation being supplied by a blast system.

E. R. Caldwell & Co., Bradford, Pa., machinists and founders, are progressing with their new building, and expect to occupy it early in July. They have had an unusual demand for castings for machine tools and hydraulic presses. Orders secured will keep them busy until fall.

The H. H. Franklin Mfg. Company, Syracuse, N. Y., founders, have given their employees a Saturday half holiday, to continue during the hot weather, and during that period the wages all round are increased 7¼ per cent. so that employees working 55 hours get the same pay as for 59 hours formerly.

Bids will be opened within a few days for the plant at Barberton, Ohio, to be established by the Pittsburgh Valve & Fittings Company.

**Fires.**

The hat manufacturing plant of F. Berg & Co., Orange Valley, N. J., was destroyed by fire June 19. The loss is about $200,000.

Guylee & Deyo, Poughkeepsie, N. Y., suffered a $4000 loss by fire at their foundry June 16.

A fire which started June 22 in the Phœnix Iron Works, Portland, Ore., did $80,000 damage to that plant and $75,000 damage to the shipyard of J. H. Johnson.

The Hoffman Hinge & Foundry Company, Cleveland, Ohio, suffered a $10,000 loss by fire a few days ago. Their foundry was not damaged, but their machinery and stock was injured to a considerable extent.

The factory of the National Fireworks Company, West Hanover, Mass., was destroyed by fire June 22, entailing a loss of about $30,000. The plant contained considerable machinery, most of which was lost.

F. Meyer, Bro. & Co., Peoria, Ill., suffered a $10,000 loss by fire at their plant last week.

The axe handle manufacturing plant of the Turner, Day & Woolworth Company, at Louisville, Ky., was damaged $85,000 by fire June 18. The loss is covered by insurance.

The Royer Wheel Works, at Aurora, Ind., were partially burned June 20. The loss is estimated at about $75,000.

The plant of the A. A. De Loach Mill Mfg. Company, Atlanta, Ga., was destroyed by fire last week, entailing a loss of about $100,000. It is understood that the plant will be rebuilt on a larger scale.

The old Bessemer mill at the Pennsylvania Steel Company's works, Steelton, Pa., was destroyed by fire June 24, involving a loss of about $25,000.

**Bridges and Buildings.**

County Commissioners at Wapakoneta, Ohio, have rejected all bids for a steel lift bridge to be built across the river and canal at St. Marys, and new bids will be opened July 14.

The new plant which the Riter-Conley Mfg. Company of Pittsburgh, Pa., are building at Leetsdale, Pa., will soon be finished and in operation. The concern will manufacture steel barges and heavy plate work at this new works, and when it is in operation the Water street plant in Pittsburgh will be abandoned.

The Pittsburgh Construction Company, Pittsburgh, Pa., received the contract for building the erecting shop for the new repair shops of the Pennsylvania Railway Company, at Columbus, Ohio. The structure will be 83 x 670 feet. In addition to this building the company will erect a round house, power plant, car shop and other buildings.

**Hardware.**

The Wilke Mfg. Company of Anderson, Ind., are building a glass lined refrigerator for the ocean going yacht of W. L. Mellon, Pittsburgh. This refrigerator will be of solid mahogany exterior, completely lined with half-inch plate glass; all hardware and trimmings will be of special design in polished lacquered brass.

The Western Cartridge Company, manufacturers of shot gun ammunition, East Alton, Ill., are about completing the erection of a new factory.

The Baum Iron Company have moved into new quarters at the corner of Thirteenth and Harney streets, Omaha, Neb., where their facilities are greatly increased.

The Root Brothers Company of Plymouth, Ohio, manufacturers of riveters' and hardware specialties, are erecting a two-story addition to their already large plant. Their trade at present is the heaviest in their history.

Montross Metal Shingle Company, Camden, N. J., refer to their present output of metal shingles and tiles as the largest since they started in business. Owing to the increased demand new machinery has recently been added to the plant. Among orders lately received have been many from foreign countries, including Africa, South America, New Zealand, Mexico and others.

More than $50,000 will be expended in enlarging the yards and plant of the National Enameling & Stamping Company at Granite City, Ill. Nearly an additional block will be taken in by the improvements.

Lansing Wheelbarrow Company, Lansing, Mich., are intending to build a plant in the South, at Memphis, Tenn., probably some time in the fall. They have recently bought 11,000 acres of timbered land in Arkansas.

Concord Axle Works, Penacook, N. H., are now installing a new 100 horse-power water wheel, more power being needed to drive the machinery. The demand for their axles shows a healthy increase from year to year.

The Warren Axe & Tool Company, Warren, Pa., are working full time, turning out 1500 axes per day.

**Miscellaneous.**

The Buckeye Stampings Company of Columbus, Ohio, have been organized with $20,000 capital stock by E. C. Derby, J. C. Burns, W. T. Smith, P. A. De Long and C. A. Morningstar. They will make tin cans, tin boxes and metal specialties.

The Virginia Coal & Iron Company, Big Stone Gap, Va., announce the lease of their coal and coke operations to the Stonega Coke & Coal Company, which will be under the same management which operated the Virginia Coal & Iron Company. All correspondence relating to accounts, purchase of supplies, &c., should be sent to the Stonega Company.

The Automobile & Cycle Parts Company of Cleveland announce that after July 1 they will handle the tubing in bicycle and automobile sizes manufactured by the Shelby Steel Tube Company of Pittsburgh. They will also manufacture and sell under royalty the patent pulleys heretofore manufactured by the Cleveland Pulley Company of Cleveland.

The Cleveland Automobile Company, Cleveland, have been incorporated with $125,000 capital stock by A. L. Moore, M. B. Johnson, H. H. Johnson, H. N. Ensworth and J. F. Russell. The company are headed by A. L. Moore, president of the Cleveland Machine Screw Company. They will manufacture light gasoline automobiles and with the exception of the engines they will buy all parts from parts makers. For the present they will utilize a portion of the factory of the Cleveland Machine Screw Company for assembling and engine building. They expect later to erect a large factory for the production of vehicles.

The Kinsman Electric & Railway Supply Company have incorporated to do a general supply manufacturing and construction business in electric railway material and machinery. Address F. E. Kinsman, Plainfield, N. J.

The Composite Board Company, whose plant at Fulton, N. Y., was destroyed by fire May 9, are building a new one at Niagara Falls. The old site has been abandoned.

The Enamel Steel Tile Company, Bellaire, Ohio, have incorporated with a paid in capital stock of $50,000 for the manufacture of enamel steel tile for wainscoting, fire fronts, hearths, ceilings, etc. The advantages claimed by the company are that the tile is vermin proof, durable and easy to put up. It will be made in a great variety of colors.

George F. Moore, 307-309 Wabash avenue, Chicago, manufacturer of room molding, is contemplating the erection of a four-story molding factory on Twenty-fourth street, near Wabash avenue, Chicago, to cost $25,000.

The Moatsville Coal & Coke Company of Charleston, W. Va., have been incorporated with a capital of $350,000, of which $50,000 is said to have been paid in.

The Worthington Company of Elyria, Ohio, have been formed by George Worthington of Cleveland, A. L. Garford of Elyria and others. The company are capitalized at $75,000, and they have bought the plant and business of the Fay Mfg. Company, Elyria, manufacturers of iron tricycles and invalid chairs. They have also bought the golf goods business of the Automobile & Cycle Parts Company, heretofore conducted at Westboro, Mass., and will remove same to Elyria.

The Midland Portland Cement Company, Law Building, Indianapolis, Ind., have plans completed for their new 2000-barrel plant to be erected at Bedford. It will be practically a duplicate of the one now being constructed by the Lehigh Portland Cement Company, at Mitchell, Ind., the materials to be used and the dry process of manufacture to be employed being the same in both. Some of the machinery has been contracted for. The officers are: Orlando M. Packard, president; Fred. W. Spacke, vice-president and treasurer, and Vanton O. Foulk, secretary.

The Foreman Can Company of Irwin, Pa., have been chartered with a capital of $22,000.

The Standard Bronze Company of Pittsburgh, with a capital of $5000, have been granted a charter.

Chas. R. Lindsay, Jr., has resigned as manager of the Welsbach Company, Chicago, to enter business on his own account. Associated with him are some prominent business men of Chicago, under the firm name of Lindsay & Co. They have taken the four-story building at 170 Lake street, Chicago, and are putting in an up to date mantle factory with a capacity of 3,000,000 mantles per year. Their business will be wholesale exclusively, catering particularly to the gasoline lamp manufacturers and large jobbers. We are informed that they have contracts on hand to keep their factory active for several months to come. In addition to mantles, they will carry a complete line of incandescent lamp supplies, and have contracted with the Turner Brass Works for their entire output of gasoline pressure lamps. The firm will represent the Manhattan Brass Company throughout the United States, west and southwest of New York and Pennsylvania.

The Whiteside Wheel Company, recently organized in Grand Rapids, Mich., for the manufacture of steel carriage wheels, are preparing to place wheels upon the market. The company are located at 4 Huron street and are installing the first of the machinery. They expect to have their shop in running operation in a few days. The parts which the company will not manufacture have already been ordered and by September 1 they expect to have an output of about 100 sets of wheels per day, their increase of facilities and output to be governed by the demand.

The Submerged Electric Motor Company, Menominee, Wis., manufacturers of submerged portable motors for boats, motor and gasoline generators, electric power motors of from ¼ horse-power up, recently increased their capital stock to $150,000.

The Delaware Hard Fiber Company, Wilmington, Del., are building an addition to their plant to cost $150,000.

C. E. and H. J. Davis of Kansas City, Mo., have purchased the Sieben Mfg. Company and the Seiben & Conlety Company, manufacturers of brass goods, and will consolidate the two concerns under the name of the Sieben Mfg. & Supply Company. The capital will be increased to $50,000, and the business will be enlarged. For the present the old building, at 1120-1122 Holmes street, will be occupied, but later they expect to either rent a larger one or erect a new plant. No new equipment is required. The new company will make plumbing specialties of all kinds.

The Northern Coal & Coke Company, with headquarters in Chicago, have secured over 100,000 acres of coal lands in Kentucky, and it is reported will build a large number of coke ovens to develop the property. Prominently identified with this concern are Frank H. Buhl, formerly president of the Sharon Steel Company, at Sharon, Pa., and P. L. Kimberly, a director of the Republic Iron & Steel Company.

The Board of Managers of the Ohio Reformatory at Mansfield, Ohio, have advertised for bids for the construction of 100 steel cells for a new building. They will also buy equipment for new workshops under erection.

# The Iron and Metal Trades.

While the market for early delivery of Foundry Iron continues exceedingly tight and higher prices are being realized, interest centers in developments for next year. One large Southern concern have opened their books for the first six months of 1903, at $16.50, Birmingham, for No. 2, and are reported by our Birmingham correspondent to have sold between 30,000 and 40,000 tons. Similar action has been taken by some of the Chicago producers, and they, too, have taken a fair amount of orders, although individually rather small.

In the East quite a good deal of business has been booked for the last half of the current year at $22 to $22.50 for No. 2 Foundry, and at $21.50 to $22 for the first six months of 1903.

On the whole, therefore, buyers seem to be taking hold to a modest extent at prices which look quite liberal.

There have been further purchases of Pig Iron in England, and several cargoes have been added to former transactions.

In the Steel trade an interesting point is that foreign business in Chicago has been somewhat checked by an advance in the through rates of freight. Some additional business in foreign Steel has been done in other districts and there is still a demand unsatisfied for future delivery.

In the Steel Rail trade the Western market seems to monopolize the activity. Chicago reports sales aggregating about 80,000 tons for next year's delivery. A very interesting transaction from an international market point of view has just been closed. It involves 120,000 tons of Steel Rails, bought for delivery in Mexico for a new road backed by Americans. It is understood that an English mill took the whole order.

Activity in the Structural trade continues unabated. Chicago reports transactions aggregating 10,000 to 12,000 tons of Beams for the first half of 1903, and in other parts of the country there is ample evidence that work is coming up liberally. The report is current that a leading Structural mill in the Rhine district in Germany sold its entire output for the balance of 1902 for shipment to this country.

The Plate trade shows a good deal of activity. As a striking illustration of the curious condition of affairs the fact is quoted that Chicago has placed an order for 3000 tons with a leading Eastern mill at 2.05c., at mill.

In the Sheet trade complaints are heard of growing competition, and notably in Galvanized Sheets prices are easy.

Bars have steadied in the West, after the little flurry referred to, but in the East concessions on Iron Bars crop up more frequently.

Pittsburgh interests have taken some round blocks of Old Material, and have made their presence felt in Eastern markets. During the past two months American buyers have appeared in European markets. It is estimated that they have purchased fully 5000 tons of Old Iron Rails, and rather more than that quantity of Steel Rails. It is understood that negotiations for further lots to come from the German and Dutch State railway systems are pending.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one month and one year previous.

| | June 25, 1902. | June 18, 1902. | May 28, 1902. | June 26, 1901. |
|---|---|---|---|---|
| **PIG IRON:** | | | | |
| Foundry Pig No. 2, Standard, Philadelphia | **$22.00** | $21.50 | $19.75 | $15.00 |
| Foundry Pig No. 2, Southern, Cincinnati | **21.25** | 20.50 | 18.75 | 13.00 |
| Foundry Pig No. 2, Local, Chicago | **21.50** | 21.50 | 21.00 | 15.00 |
| Bessemer Pig, Pittsburgh | **21.50** | 21.50 | 21.00 | 16.00 |
| Gray Forge, Pittsburgh | **20.50** | 20.00 | 19.75 | 14.00 |
| Lake Superior Charcoal, Chicago | **24.00** | 24.00 | 23.00 | 17.00 |
| **BILLETS, RAILS, ETC.:** | | | | |
| Steel Billets, Pittsburgh | **32.50** | 32.50 | 32.00 | 24.50 |
| Steel Billets, Philadelphia | 29.50 | 30.00 | 34.00 | 26.75 |
| Wire Rods, Pittsburgh | 37.00 | 37.00 | 37.00 | 39.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| Spikes, Tidewater | 2.00 | 2.00 | 2.00 | 1.80 |
| Splice Bars, Tidewater | 1.90 | 1.90 | 1.60 | 1.40 |
| **OLD MATERIAL:** | | | | |
| O. Steel Rails, Chicago | **18.50** | 18.50 | 18.00 | 13.00 |
| O. Steel Rails, Philadelphia | 21.00 | 21.25 | 21.00 | 15.00 |
| O. Iron Rails, Chicago | 24.00 | 24.00 | 24.00 | 18.50 |
| O. Iron Rails, Philadelphia | **24.50** | 24.50 | 24.00 | 19.00 |
| O. Car Wheels, Chicago | **21.00** | 20.50 | 20.50 | 16.50 |
| O. Car Wheels, Philadelphia | **20.00** | 20.00 | 19.50 | 17.50 |
| Heavy Steel Scrap, Chicago | **20.00** | 19.00 | 18.00 | 13.00 |
| **FINISHED IRON AND STEEL:** | | | | |
| Refined Iron Bars, Philadelphia | 1.95 | 1.95 | 2.00 | 1.55 |
| Common Iron Bars, Chicago | 1.80 | 1.75 | 1.80 | 1.55 |
| Common Iron Bars, Pittsburgh | 1.80 | 1.80 | 1.80 | 1.45 |
| Steel Bars, Tidewater | 1.90 | 1.95 | 1.90 | 1.60 |
| Steel Bars, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.40 |
| Tank Plates, Tidewater | 2.00 | 2.00 | 1.95 | 1.75 |
| Tank Plates, Pittsburgh | **1.75** | 1.80 | *1.60 | 1.60 |
| Beams, Tidewater | 2.10 | 2.10 | 2.00 | 1.75 |
| Beams, Pittsburgh | *1.60 | *1.60 | *1.60 | 1.60 |
| Angles, Tidewater | 2.00 | 2.00 | 2.00 | 1.75 |
| Angles, Pittsburgh | *1.60 | *1.60 | *1.60 | 1.60 |
| Skelp, Grooved Iron, Pittsburgh | *2.15* | 2.15 | 2.22 | 1.82½ |
| Skelp, Sheared Iron, Pittsburgh | 2.25 | 2.35 | 2.25 | 1.90 |
| Sheets, No. 27, Pittsburgh | 2.90 | 2.90 | 2.95 | 3.20 |
| Barb Wire, f.o.b. Pittsburgh | 2.90 | 2.90 | 2.90 | 2.90 |
| Wire Nails, f.o.b. Pittsburgh | 2.05 | 2.05 | 2.05 | 2.30 |
| Cut Nails, Mill | 2.05 | 2.05 | 2.05 | 2.00 |
| **METALS:** | | | | |
| Copper, New York | *13.00* | 12.25 | 12.37½ | 17.00 |
| Spelter, St. Louis | **4.70** | 4.75 | 4.50 | ... |
| Lead, New York | 4.10 | 4.10 | 4.10 | 4.37½ |
| Lead, St. Louis | 3.97½ | 3.97½ | 4.00 | ... |
| Tin, New York | *28.25* | 28.75 | 29.87½ | 28.35 |
| Antimony, Hallett, New York | **8.37½** | 8.00 | 8.00 | 8.75 |
| Nickel, New York | 50.00 | 50.00 | 50.00 | 60.00 |
| Tin Plate, Domestic, Bessemer, 100 lbs., New York | 4.19 | 4.19 | 4.19 | 4.19 |

* Official quotations.

## Chicago.

FISHER BUILDING, June 25, 1902.—*(By Telegraph.)*

The difficulty of obtaining desirable fuel in adequate amounts is embarrassing consumers of Pig Iron as well as producers, and the scarcity of Anthracite Coal and Coke is having an important bearing on the market for Pig Iron, especially for the last of the year. There have been further sales, of moment, aggregating probably 20,000 tons of both Northern and Southern Iron for delivery during the first four to six months of 1903, but not a few of the larger buyers are still indisposed to anticipate their needs largely, except where they are covering contracts already placed. Spot Iron has again been in urgent demand and premiums of 50c. to $1 per ton have been obtained over the prices current for the last half of the year. The Bar Iron market has been somewhat steadier, reflecting higher prices for both Pig and Scrap. Speculative lots, too, have been less depressing, and as a number of mills will close for repairs about July 10 there is a little more confident feeling. There have been further liberal orders for Structural Material and further important contracts placed for the first half of 1903. More domestic Billets have been offered and some sales made, but less has been heard of foreign Steel, the advance in freight rates having somewhat checked business. Cast Pipe has appreciated, and Heavy Plates from store have been held higher. Various kinds of

Scrap Iron have also advanced, but otherwise few changes have been made in prices.

**Pig Iron.**—Further buying for 1903 delivery has been the prominent feature of the market during the week. In the aggregate about 20,000 tons have been sold for delivery during the first six months of next year, but the individual transactions have not been large, ranging from 1000 to 3000 tons each. Stove founders, machine shop proprietors, agricultural implement manufacturers and one or two malleable founders have been among the buyers, but as a rule the large buyers are still indisposed to contract largely for next year. Most of the sales for local Iron have been to cover contracts on the basis of $21 for No. 2. A little Southern Iron has been sold on the basis of $17.50 to $18, Birmingham, for No. 2 Foundry. Furnaces, both North and South, show more disposition to sell for next year, and if any change is apparent it is a somewhat easier undertone. For the latter half of this year, however, the market is as strong as ever, and local Iron is still tending upward, especially No. 2, which is 50c. per ton higher at the close. Spot Iron is even more difficult to obtain, and there is more urgency from founders in this section, indicating that deliveries on contract are not being readily filled. For immediate delivery prices are still irregular. As a rule sales are being made at 50c. to $1 per ton above quotations, but in some instances speculators demand and obtain even higher prices. The scarcity of the fuel and the difficulty in obtaining contract supplies is an unsettling element, causing no little anxiety to furnaces and foundries alike. Mills in this section are buying very little Pig, but Scrap Iron is becoming scarcer and prices are tending upward. Car Wheel Iron continues to be especially scarce. We quote as follows:

| | |
|---|---|
| Lake Superior Charcoal | $24.00 to $25.00 |
| Local Coke Foundry, No. 1 | 22.00 to 22.50 |
| Local Coke Foundry, No. 2 | 21.50 to 22.00 |
| Local Coke Foundry, No. 3 | 21.00 to 21.50 |
| Local Scotch, No. 1 | 22.00 to 23.00 |
| Ohio Strong Softeners, No. 1 | 24.00 to 24.50 |
| Southern Silvery, according to Silicon | 22.65 to 24.65 |
| Southern Coke, No. 1 | 22.15 to 22.65 |
| Southern Coke, No. 2 | 21.65 to 22.15 |
| Southern Coke, No. 3 | 21.15 to 21.65 |
| Southern Coke, No. 1 Soft | 22.15 to 22.65 |
| Southern Coke, No. 2 Soft | 21.65 to 22.15 |
| Foundry Forge | 20.15 to 20.65 |
| Southern Gray Forge | 20.15 to 20.65 |
| Southern Mottled | 20.15 to 20.65 |
| Southern Charcoal Softeners, according to Silicon | 22.00 to 22.50 |
| Alabama and Georgia Car Wheel | 25.00 to 26.00 |
| Malleable Bessemer | 22.00 to 22.50 |
| Standard Bessemer | 24.00 to 24.50 |
| Jackson County and Kentucky Silvery, 6 to 8 per cent. Silicon | 24.60 to 25.60 |

**Bars.**—The tendency is toward a little steadier market, based upon the fact that Scrap is scarce and desirable qualities are higher. Mills claim that under present conditions there is no profit in Bars at 1.75c., and while a few transactions may have been made at this price most holders are demanding 1.80c. The speculative lots which have been on the market are causing less pressure, and if not disposed of by July 1, the time for specification, contracts will be canceled. The demand from store continues active and the market is strong at full prices. For Soft Steel Bars there has been a fair demand, with one sale of 3000 tons, but the majority of transactions have been in moderate amounts. The market continues firm at 1.75c. to 1.90c.; Hoops are selling at 2.15c. to 2.25c., and Angles, 2.25c., base, mill. From store there is a liberal volume of business, Soft Steel Bars selling at 2.25c., Angles at 2.50c. and Hoops at 2.50c., base.

**Structural Material.**—There has been an active demand and a strong market, with sales in lots of 1000 to 2000 tons, aggregating 10,000 to 12,000 tons, for delivery during the first half of next year. Among the interesting features of the week has been the sale of 900 tons for the power house of the Commonwealth Electric Company, the construction of which is to be rushed, as the building will be utilized for experimenting with the steam turbine recently contracted for by the company. There have been a few moderate sales of foreign Steel in 100 to 300 ton lots, but no large transactions have been reported. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 1.75c. to 1.85c. Small lots of Beams and Channels from local yards are quoted at 2.50c. to 3.50c.; Angles, 2.50c. to 3.50c. rates; Tees, 2.55c. to 3.50c. rates.

**Plates.**—The market is very strong with an active demand, but the mills are taking few, if any, orders, they being already rushed with work on previous contracts. Mill prices are as follows: Tank Plate, ¼-inch and heavier, 1.75c. to 2.25c.; Flange, 1.85c. to 2.35c.; Marine, 1.95c. to 2.50c. The jobbing demand has continued active and the market has been firmer in tone and some dealers have advanced prices. Following are the quotations from store: Tank Steel, ¼-inch and heavier, 2.20c. to 2.50c.; Tank Steel, No. 8, 2.35c. to 2.55c.; Flange, 2.30c. to 2.75c., all f.o.b. warehouse.

**Sheets.**—The market for Heavy Sheets has remained firm, with full prices readily obtained, but Light Sheets have been slow and barely steady, Galvanized Sheets being especially quiet. Mill shipments are as follows: No. 27 Black Sheets, 3.15c. to 3.25c., Chicago, and small lots from store, 3.45c. to 3.55c. Galvanized Sheets, net prices, mill shipment, are held on the basis of 4.45c. to 4.50c., and small lots from store at 4.70c. to 4.75c. for No. 27. Discounts are allowed, however, by certain mills.

**Cast Pipe.**—There has been an increased flow of small orders aggregating a considerable tonnage, and with Pig Iron still tending upward prices of Pipe have been advanced from 75c. to $1 per ton. One or two large contracts are still pending. Cast Iron Water Pipe is quoted by manufacturers as follows: 4-inch, $34.75; 6-inch, $33; 8-inch and upward, $32; Gas Pipe, $1 per ton higher than Water, f.o.b. Chicago.

**Merchant Pipe.**—There has been a fair movement and the market has remained steady. Carloads are quoted as follows, random lengths: Black, ⅛ to ½ inch, 56½ off; ¾ to 12 inches, 63½ off; Galvanized, ⅛ to ½ inch, 43½ off; ¾ to 12 inches, 50½ off.

**Boiler Tubes.**—There has been a good demand and the market has remained firm in tone. Prices for mill shipments are as follows:

| | Steel. | Iron. |
|---|---|---|
| 1 to 1½ inches | 42½ | 39 |
| 1¾ to 2½ inches | 55½ | 38 |
| 2¾ to 5 inches | 61 | 48 |
| 6 inches and larger | 55½ | 38 |

There has been a fair order trade from store, the market remaining firm as previously quoted:

| | | |
|---|---|---|
| 1 to 1½ inches | 35 | 35 |
| 1¾ to 2½ inches | 47½ | 32½ |
| 2¾ to 5 inches | 55 | 42½ |
| 6 inches and larger | 47½ | .. |

**Merchant Steel.**—There has been but little change in general conditions, there being a good demand and a steady market for the higher grades. The combination, which is the largest element in the market, has made no change in quotations, but independent producers are still selling the low grades of Tool Steel as previously noted. The jobbing trade is especially active, Tire and Spring Steel being distributed much further East by jobbers than is usually the case. Sales have been made during the week to Cleveland, Toledo and Detroit, local dealers having grades wanted, which are especially scarce at the buying points mentioned. Mill shipments are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.95c. to 2.10c.; Open Hearth Spring Steel, 2.65c. to 2.75c.; Toe Calk, 2.25c. to 2.40c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 50 off in carload lots. Ordinary grades of Crucible Tool Steel are quoted at 6½c. to 7c. for mill shipments; specials, 12c. upward.

**Rails and Track Supplies.**—About 80,000 tons of Heavy Sections have been sold to Western railroads during the week for 1903, in lots of 30,000, 20,000 and 10,000 tons. It is reported here that the Pennsylvania Railroad has placed contracts for 175,000 tons of Rails with Eastern mills, but the report, although credited, could not be verified in this market. There has been little if any movement in foreign Rails, but a fair demand for domestic Light Sections, prices continuing to range from $35 to $40 per ton, according to weight and time of delivery. Heavier Sections continue unchanged at $28 at the mill. There has been an active demand for Track

Supplies and the market has continued strong. Fastenings are quoted in carload lots: Splice Bars or Angle Bars, 2c.; Spikes, 2.40c. to 2.50c.; Track Bolts, with Hexagon Nuts, 3.10c. to 3.45c.; Square Nuts, 2.95c. to 3.10c.

**Billets.**—A less urgent demand for domestic Billets has been experienced, but there has been a fair volume of business, with sales of lots of 1000 to 1800 tons at $36, for fall delivery, and smaller lots have ranged from $38 to $42, according to analysis, time of delivery and responsibility of buyer. The advance of through freight from abroad for the time being has checked trade in foreign Steel and quotations are nominal at $32.50 to $33 for Billets, delivered Chicago.

**Old Material.**—Desirable Scrap, especially the grades most in demand by local mills, is scarce, and the market is strong in tone, with higher prices obtained in some instances. Some railroads are being importuned for Scrap and have made sales in advance, anticipating an accumulation of supply for several months ahead. Old Rails, both rerolling and relaying, are held more firmly, but no transactions of moment are recorded. The following are the approximate quotations per gross ton:

| | |
|---|---|
| Old Iron Rails | $24.00 to $25.00 |
| Old Steel Rails, mixed lengths | 18.50 to 19.50 |
| Old Steel Rails, long lengths | 23.50 to 24.50 |
| Heavy Relaying Rails | 31.50 to 32.50 |
| Old Car Wheels | 21.00 to 22.00 |
| Heavy Melting Steel Scrap | 20.00 to 22.00 |
| Mixed Steel | 15.50 to 16.00 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $22.00 to $23.00 |
| Iron Car Axles | 25.00 to 26.00 |
| Steel Car Axles | 22.00 to 23.00 |
| No. 1 Railroad Wrought | 21.00 to 22.00 |
| No. 2 Railroad Wrought | 18.00 to 19.00 |
| Shafting | 18.50 to 19.00 |
| No. 1 Dealers' Forge | 16.00 to 16.50 |
| No. 1 Busheling and Wrought Pipe | 14.00 to 15.00 |
| Iron Axle Turnings | 14.00 to 15.00 |
| Soft Steel Axle Turnings | 13.50 to 14.00 |
| Machine Shop Turnings | 13.50 to 14.00 |
| Cast Borings | 9.00 to 9.25 |
| Mixed Borings, &c | 9.50 to 10.25 |
| No. 1 Boilers, cut | 13.00 to 13.50 |
| Heavy Cast Scrap | 14.50 to 15.00 |
| Stove Plate and Light Cast Scrap | 10.50 to 11.00 |
| Railroad Malleable | 16.25 to 16.75 |
| Agricultural Malleable | 14.50 to 15.00 |

**Metals.**—A weaker tone has been developed for Copper and prices have declined, although there has been a fair demand. Lead is selling at 12⅜c. in carload lots, and 13c. in a jobbing way. Pig Lead has continued in good demand and firm at 4.05c. for Desilverized in 50-ton lots, and 4.07½c. for carload lots. There has only been a moderate demand for small lots of Old Metals, with a little easier tone for Copper and Brass. Prices are unchanged, as follows: Heavy Cut Copper, 11¼c.; Red Brass, 11¼c.; Copper Bottoms, 10c.; Lead Pipe, 3.80c.; Zinc, 3⅜c.

**Coke.**—A strong tone has continued to characterize the market, very little Coke from either the Connellsville or Pocahontas district being obtainable, and higher prices have ruled for immediate shipment. There has been a fair movement on contract. Connellsville 72-hour Foundry Coke is difficult to obtain under $5.75, and has sold up to $6. Virginia and West Virginia has sold at $5.50 to $6, Chicago.

---

The Pennsylvania Steel Company announce that on and after July 1, 1902, the Northwestern office of the company will be located in the Western Union Building, Chicago, Clifford J. Ellis having been appointed sales agent. In view of the fact that the offices of the Pennsylvania and the Cambria Steel company will be united, however, it should be noted that no change will be made in the management of the Cambria Steel Company at Chicago, Clifford J. Ellis remaining sales agent and Alan F. McIntire assistant sales agent of the Cambria Company.

---

The Neafie & Levy Ship Building Company, Philadelphia, Pa., launched successfully on the 21st inst. the cruiser "Denver," building for the United States Government. The "Denver" is an unarmored steel protected twin screw cruiser of 3200 tons displacement and she will have an average speed of 16½ knots per hour. The armament will consist of ten 5-inch rifles as a main battery and eight 8-pounder rapid fire guns and two 1-pounders will compose the secondary battery.

## Philadelphia.

FORREST BUILDING, June 24, 1902.

The Iron market is in a more confused condition than it has yet been, and the way out of the difficulty appears to be no nearer than it was a month ago. Stocks of Iron are virtually nonexistent, and even carload lots have to be gone after with a searchlight. At this writing $23 for No. 2X Foundry, July delivery, would be considered a low price, and in some instances considerably more than that has been paid for immediate shipments, but it is difficult to get as large as 50 to 100 ton lots, as everything was taken up long ago, and the output goes to those who have prior claims on it. As many of the furnaces are banked for want of fuel and others are making a smaller tonnage, as well as an inferior grade of Iron, it is easy to see how uncertain the situation is. Conditions are such that no trustworthy estimate can be made in regard to the ultimate outcome, except that scarcity and high prices appear to be inevitable for a very long time to come. Furnace banks and consumers' yards are alike bare of stock; and it will take months to restore them to normal proportions, besides which, consumption promises to be of extraordinary magnitude. On the other hand, it must not be overlooked that a great deal of foreign material is coming in. Not in Pig Iron specially, but in Pig Iron products, such as Billets, Sheet Bars, Structural Material, Large Rounds, &c. A great deal of Scrap is also coming in, and purchases of upward of 25,000 tons Spiegeleisen are reported to have been made quite recently, so that it may be well to keep in mind that there is a good deal more material available than is produced within our own boundaries. Moreover, the first sign of a set back would cause such a revulsion of sentiment, that some who, on a stringent market are clamoring for "more," would, under such circumstances, be among the very first to "hold up" shipments. There is no prospect of anything of the kind at present, but in any case it is only a question of time when such conditions will be in evidence, and it will do no harm to keep these matters in mind. It is a little surprising that there is a distinctly easier feeling in Bars, Sheets and two or three other specialties. The season is at hand when there is usually a larger demand to tide over the midsummer holidays, and, although there has been a several weeks' suspension of work at some of the leading local mills, there are no indications of scarcity—rather the reverse, in fact. The situation is therefore so peculiar, and the outlook so uncertain, that there is no basis for very confident opinions in regard to the future, except that a settlement of the Coal strike would be as likely to give an immediate stimulus to business as its continuance is likely to have a contrary effect.

**Pig Iron.**—Quotations of Pig Iron are very erratic, as the circumstances in each individual case determine what price the seller will name. In some cases 50 cents to $1 more would be named than to a regular customer, and when it is a question of getting Iron or suspending work, the difference mentioned is of no great importance to the consumer. No large lots could be had at any price for July or August delivery, but carload lots of 50 or 100 tons each, command $23 for No. 2X Foundry, and $22 to $22.50 for No. 2 Plain; in some cases still higher prices have been paid. The last quarter of the year is also very close sold up, and $22 to $22.50 for No. 2X is as low as sellers are inclined to quote, although those who have nothing to offer say that the figures are too high. A very considerable business has been done for deliveries during the first half of next year, at $21.50 to $22 for No. 2X, and $21 to $21.50 for No. 2 Plain. The supply of Gray Forge is in disproportion with foundry grades, consequently they are not more than 25 cents dearer, but everything goes at a price. Middlesboro and Scotch Irons are quickly taken, spot lots of the former at $21.50 to $22, delivered, and Scotch Iron at $22.50 to $23. Canadian Iron is coming in pretty regularly, but deliveries are mostly on old contracts, so that prices are not quotable at the present time. The figures above named are for de-

liveries in buyers' yards, city or nearby points; a fair average being about as follows for city and nearby points for deliveries during the last quarter of the year, July, August and September deliveries being anywhere from $1 to $2 higher:

| | |
|---|---|
| No. 1 X Foundry | $23.00 to $23.50 |
| No. 2 X Foundry | 22.00 to 22.50 |
| No. 2 Plain | 21.50 to 22.00 |
| Standard Gray Forge | 19.25 to 19.75 |
| Ordinary Gray Forge | 18.75 to 19.00 |
| Basic | 20.50 to 21.00 |
| Low Phosphorus | 22.50 to 23.00 |
| No. 3 Middlesbro (prompt shipments) | 21.50 to 22.00 |
| Scotch Irons | 22.50 to 23.00 |

**Billets.**—There is an easier feeling and bids at last week's prices are not in evidence to-day. Buyers talk about $29.50 to $31 for foreign, and $33 to $34 for American Steel.

**Plates.**—The demand is excellent and some of the mills are still turning down business. Consumption appears to be on a larger scale than ever, and as mills are not turning out their normal output, the scarcity is more noticeable than it has been for several weeks past. Both fuel and other material is hard to get promptly, hence the difficulty in making a satisfactory output. Prices are about as follows for Philadelphia and nearby points: Small lots, 2.10c. to 2.15c. Carload lots and upward: ¼-inch and thicker, 2c. to 2.05c.; Universals, 2c. to 2.05c.; Flange, 2.10c. to 2.20c.; Fire Box, 2.25c. to 2.30c.; Marine, 2.30c. to 2.35c.; Charcoal Plates, C. H. No. 1, 2½c.; C. H. No. 1 Flange, 3c.; C. H. No. 1 Flange Fire Box, 3½c.

**Structural Material.**—Conditions are in all respects unchanged, except that consumers are hopeful of getting better deliveries in the near future. Some of the Western mills are said to be entering orders at the old combination figures, but nothing can be had during the next three or four months at less than $2.25 to $2.50 for Beams, Angles or Channels. For Eye Bars and Beams 3c. has been paid for a prompt delivery.

**Bars.**—The market is unsettled and, on the whole, somewhat easier. Some mills report sales at 1.95c. to 2c. in carload lots of Refined Iron, but in other cases buyers claim to be doing better than the inside figures, so that a good deal depends on the kind of order and point of delivery. Steel Bars are nominally about 1.90c., but it requires $5 a ton more to secure a satisfactory delivery.

**Sheets.**—Market inclined to slightly lower prices, as there is not as much demand as is usually expected at this season. The shortage of fuel and other material prevents a full output, however, so that taking everything into account it is a fair stand off on both sides. Prices unchanged, best Sheets are quoted as follows, and a tenth less for common Sheets (in carload lots): Nos. 10 and 12, 2.40c. to 2.60c.; No. 14, 2.70c.; Nos. 16 and 17, 3c.; Nos. 18-21, 3.30c.; Nos. 26, 27, 3.40c.; No. 28, 3.50c.

**Old Material.**—Western buyers are taking a good deal of material from points usually tributary to this market, which, in the meanwhile, is a sustaining feature, otherwise prices would probably be a little lower. A fair avearge of bids and offers would be about as follows for deliveries in buyer's yards: Low Phosphorus Scrap, $25 to $26; Heavy Melting Steel, $20.75 to $21.25; Steel Rails, short lengths, $21 to $21.50; Choice Railroad Scrap, $23.50 to $24. No. 1 Yard Scrap, $19 to $20; No. 2 Light Forge, $18 to $19; No. 2 Light, old, $15 to $16; Machinery Cast, $18.50 to $19; Iron Rails, $24.50 to $25.50; Old Car Wheels, $20 to $21; Iron Axles, $29 to $30; Steel Axles, $27 to $28; Wrought Turnings, $16 to $17; Cast Borings, $10.50 to $10.75.

---

Gruson Iron Works, Chester, Pa., will remove their Philadelphia offices on July 1 to rooms 1103-04-05 Penn Square Building, 1416 and 1418 South Penn Square.

---

Charles R. Roof has resigned his position as superintendent of the works of the Youngstown Mfg. Company, at Youngstown, Ohio, manufacturers of bolts and rivets. Mr. Roof, with others, is now engaged in forming a new company, with a capital of $200,000, to make bolts and rivets. It is possible the works will be built in Youngstown.

## Cleveland.

CLEVELAND, OHIO, June 24, 1902.

Iron Ore has been coming forward the past week at a pace that promises big things by the time the season is over. The dispatch has been almost faultless, boats being delayed the minimum amount of time, and the docks being able to handle more Ore than they have ever unloaded in their history. This is partly due to the recent installation of better facilities in the way of clam shell scoops for the unloading of Ore, and these are kept going continuously, three shifts being employed at some of the docks. The better supply of cars being taken into consideration, it is safe to predict that June will show the heaviest month's movement of Ore that has ever been recorded. There has been a big demand at the head of the lakes for tonnage, and the market has been very strong, but the desire of vessel owners to ask better rates has been offset by the appearance in the market of lumber carriers looking for Ore loads, which has kept the rates of carriage down to 75c. from Duluth to Ohio, other ports being graded on that rate. A few small sales of Ore are reported now and then, but the producers are about winding up their sales for this season, unless, however, the possibility of moving 25,000,000 tons reopens the market for other and larger sales.

**Pig Iron.**—There is still talk of the United States Steel Corporation buying Bessemer Pig Iron for delivery during the second quarter of 1903, but it seems that the question of price is to be one of the elements which will likely prevent such a transaction for a while. The furnacemen are disposed to demand a price considerably above that which was paid on the last big sale, $16.50 in the Valley, and it is understood that the corporation are not willing to meet the furnacemen on the price asked. The Bessemer Association itself is understood to be divided in sentiment as to the price that ought to be asked, some holding the conservative opinion that the lower price will insure business activity longer, the radicals, however, desiring to take quick profits regardless of consequences. The present Bessemer market is very strong, and the producers are hearing many requests for material which they are not able to supply. In Basic, owing to the lack of any Iron to sell the producers are not quoting prices. There is still a little being sold for quick shipment in the Foundry grades, but it is in small lots, never exceeding a single carload, and even these are scarce. The furnaces in the Mahoning and Shenango valleys have not fully recovered from the effects of the strike of the furnacemen, and, of course, have nothing for sale just now. In addition the furnaces in Southern Ohio, ten in number, have banked their fires on account of a scarcity of Coke, brought on by the strike in the Pocahontas district. This has cut down the available supply of Pig Iron in this district materially. The great demand and the scarcity have boosted prices, and market quotations now are $22.50 for No. 1, and $22 for No. 2, at Valley furnace. Some sales have been made extending into next year, but these are few in number in this territory, although reported with greater frequency from others. Sales agents here have in certain instances discouraged purchases at present values, believing that until after the condition of the crops is known such buying is more or less of a gamble. This belief is not generally held by consumers who have contracts for their product extending into next year, and are anxious to cover their needs.

**Finished Material.**—Buying for next year's delivery relieves the market which otherwise would be rather dull. So far this buying has been confined to Rails and Structural Material, although a little advance ordering on the heavier Plates has been included. Structural Material seems to have been sold well up into the second quarter, and the contracts now being made are large. The price obtained for next year's delivery has been universally 1.70c., although some of the smaller mills have been disposed to break away from this quotation under the stress of present demand. There is a big call for quick shipment, and jobbers report that as fast as they get a little stock it is immediately taken up. On such

sales prices remain at from 2½c. to 3¼c. The demand for Plates has not changed, neither has the supply. The product has been sold up for this year by the larger mills, even of Sheared Plates; and there is some talk of buying for the coming season, although there have been but a few instances where this was done. The gauges intermediate between Plates and Sheets are very scarce, and could command a handsome price were any to be had. Plate quotations are still 1.70c. The demand for Sheets keeps up, but the supply is adequate. Prices continue at 2.50c. for No. 10 as a basis on the gauges between Nos. 10 and 16, and 3.50c. to 3.60c. for No. 27 as a basis on the gauges between Nos. 17 and 28, one pass cold rolled. In Bars most of the activity has been in Steel. Scrap Iron is so high that Iron Bars cannot be produced and sold with any profit at the market quotation of 1.80c., which is still nominally made. The cost of Scrap indicates a price for the Finished Material nearer to 2¼c. The smaller sizes of Steel Bars are plentiful, but upward of 2 inches the supply is short, and large rounds cannot be had in less than six months. On the smaller sizes, however, deliveries are offered inside of two weeks. The quotation on Bessemer Bars is 1.60c., Pittsburgh, and on Open Hearth Bars, 1.70c., Pittsburgh. Premiums might be obtained very readily on large rounds if the material could be furnished. In Rails the trade is becoming extraordinarily heavy for so early in the year, all for next year's delivery. The price is $28. On lighter Rails there is a large present demand, and the market is increasingly strong. Some sections are now being sold as high as $40 a ton.

**Old Material.**—The Scrap trade is showing active manipulation on the part of speculators and the mills are suffering in consequence. Many dealers have been trying to beat down prices, but they have sold short and collectors are making them pay dearly for the material furnished. The result is that prices now have jumped to a point where many of the consumers fear they cannot use the material. Quotations do not change from those which have been mentioned heretofore, being as follows: No. 1 Wrought, $19.50 net; Iron Rails, $27.50 gross; Iron Axles, $26 net; Cast Borings, $10 gross; Wrought Turnings, $15.25 gross; Cast Scrap, $16 gross; Car Wheels, $19 gross; Heavy Melting Steel, $19 gross; Old Steel Rails, $20 gross.

## St. Louis.

CHEMICAL BUILDING, June 25, 1902.—(*By Telegraph.*)

**Pig Iron.**—So far as the situation in the Pig Iron market is concerned at this point we can note no new features. The matter of price is rather a difficult problem to determine, as actual transactions are of a very light order at this time, and any lots of material for quick delivery that can be offered are snapped up at the sellers' own terms. A distinctly hardening tendency is noticeable, and any further developments in the Coke situation affecting the Virginia supply it is feared will bring about an acute stage in the market. The following is the range of prices current for cash, f.o.b. St. Louis:

| | |
|---|---|
| Southern, No. 1 Foundry | $20.50 to $23.25 |
| Southern, No. 2 Foundry | 19.75 to 22.50 |
| Southern, No. 3 Foundry | 19.25 to .... |
| Southern, No. 4 Foundry | 18.75 to 21.50 |
| No. 1 Soft | 20.25 to 23.00 |
| No. 2 Soft | 19.75 to 22.50 |
| Gray Forge | 18.00 to 18.50 |
| Southern Car Wheel Iron | .... to 24.00 |
| Malleable Bessemer | .... to 23.00 |
| Ohio Silvery, 8 per cent. Silicon | .... to 22.00 |
| Ohio Strong Softener, No. 1 | .... to 23.00 |
| Ohio Strong Softener, No. 2 | .... to 22.00 |

**Bars.**—The jobbing trade refer to the volume of business in the market for Iron and Steel Bars as being very satisfactory, and in the matter of quotable prices we can note no changes. We quote from the mills: Iron Bars at 1.90c., Steel Bars at 1.90c. to 2c. Jobbers quote Iron Bars at 2.25c., Steel Bars at 2.25c., full extras.

**Rails and Track Supplies.**—In the matter of the volume of demand and inquiry for Rails and Track Supplies we can note no change, and the mills continue to keep to the top notch of their production. We quote: Splice Bars at 2.10c. to 2.15c.; Bolts, Square Nuts, 3c. to 3.10c.; with Hexagon Nuts, 3.25c. to 3.30c.; Spikes, 2.35c. to 2.45c.

**Angles and Channels.**—The jobbing trade continue to report a very satisfactory demand for Small Angles and Channels, and in the matter of quotation 2.50c., base, continues for materials of this class.

**Sheets.**—The trade in this department of the market for all the various grades and sizes of Sheets is reported by the jobbing trade to be in satisfactory volume and prices rule on a very firm basis.

**Pig Lead.**—The market for Pig Lead is dull, and the price-list shows little fluctuation during the week under review. Chemical is quoted at 3.97½c., and Desilverized at 4c.

**Spelter.**—The unsettled conditions in the Spelter situation continue, and transactions in the market thereby are very much restricted. We hear of July futures selling at 4.75c.

## Cincinnati.

FIFTH AND MAIN STS., June 25, 1902.—(*By Telegraph.*)

The general situation in Pig Iron, so far as immediate delivery is concerned, is unchanged. Iron in sight for delivery between now and January is still very scarce, though one furnace company in the South, who have been withdrawn from the market for some weeks, have notified their agents here that they will have between 50,000 and 60,000 tons of Standard Iron to be marketed at a later date, probably some time during the latter part of July. The present supply is limited to odd lots which come from unexpected sources, and are bringing almost anything the sellers are inclined to ask. At this writing it is not believed that there is any Iron to be had for any delivery this year on a less basis than $18.50, Birmingham, for No. 2 Foundry, and the majority of the sellers are holding to $19. When it comes to figuring for 1903 deliveries the situation is somewhat changed. One large Southern interest have notified their agents that they are open for the first six months of the year to the extent of their output on the basis of $16.50, Birmingham, for No. 2 Foundry, and on this basis it is well enough to add that some 30,000 or 40,000 tons are known to have been placed. Other furnaces are asking $17 for the same grade, and are doing some selling on that basis. In view of the feeling that advanced freights are a certainty, the company accepting business for next year are doing so on the basis of the Birmingham prices, the freights, be they advanced or decreased, to be assumed by the purchasers. Freight rate from Hanging Rock district is $1.10 and from Birmingham $2.75. We quote, f.o.b. Cincinnati, for 1902 delivery as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $21.75 to $22.25 |
| Southern Coke, No. 2 | 21.25 to 21.75 |
| Southern Coke, No. 3 | 20.75 to 21.25 |
| Southern Coke, No. 4 | 20.25 to 20.75 |
| Southern Coke, No. 1 Soft | 21.75 to 22.25 |
| Southern Coke, No. 2 Soft | 21.25 to 21.75 |
| Southern Coke, Gray Forge | 20.25 to 20.75 |
| Southern Coke, Mottled | 20.25 to 20.75 |
| Ohio Silvery, No. 1 | 24.10 to 24.35 |
| Ohio Silvery, No. 2 | 23.60 to 24.10 |
| Lake Superior Coke, No. 1 | 24.60 to 25.10 |
| Lake Superior Coke, No. 2 | 24.10 to 24.60 |
| Lake Superior Coke, No. 3 | 23.60 to 24.10 |
| *Car Wheel and Malleable Irons.* | |
| Standard Southern Car Wheel, chilling grades | $25.50 to $26.00 |
| Standard Southern Car Wheel, No. 2 | 25.00 to 25.50 |
| Lake Superior Car Wheel and Malleable | 25.00 to 26.00 |

Quotations for first six months of 1903, f.o.b. Cincinnati, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $19.75 to $20.25 |
| Southern Coke, No. 2 | 19.25 to 19.75 |
| Southern Coke, No. 3 | 18.75 to 19.25 |
| Southern Coke, No. 4 | 18.25 to 18.75 |
| Southern Coke, Gray Forge | 18.25 to 18.75 |
| Southern Coke, Mottled | 18.25 to 18.75 |
| Southern Coke, No. 1 Soft | 19.75 to 20.25 |
| Southern Coke, No. 2 Soft | 19.25 to 19.75 |

**Plates and Bars.**—The market is quite active, and prices are being very strongly maintained. In some instances higher figures are being asked for retail lots. We quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.90c. to 2c., with half extras; same, in small lots, 2.20c., with full extras; Steel Bars in carload lots, 1.72c., with half extras; same, in small lots, 2.20c., with full extras; Angles, 2.30c. to 2.50c.; Plates, 3-16 inch and heavier, 2c.

**Old Material.**—The market is nominally unchanged

and quotations are firmly held. We quote dealers' buying prices, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, $20 per net ton; Iron Axles, $23 to $25 per net ton; Cast Machine Scrap, $14.50 to $15 per gross ton; Steel Rails, rolling mill lengths, $24 to $24.25; same, short lengths, $17 to $17.50 per gross ton; Car Wheels, $19 to $19.50 per gross ton.

## Pittsburgh.

*(By Telegraph.)*

PARK BUILDING, June 25, 1902.

**Pig Iron.**—While the Pig Iron market is somewhat quiet as far as sales are concerned, prices are very strong and there is more difficulty than ever in getting deliveries. Some of the furnaces that were banked during the recent strike are not yet working properly and are not getting out maximum output. The greater part of the product of the furnaces for the balance of this year is under contract, and there is very little Iron to be had. Bessemer Iron, for shipment over last six months, is about $21 at furnace, but it is probable that $20.25 to $20.50 could be done where deliveries run into next year. Small lots of Bessemer for prompt shipment have sold above $21 at furnace. There is a good demand for Gray Forge and it has sold at $20.50 to $20.75, Pittsburgh, for early shipment and can hardly be had even at this high price. The market on No. 2 Foundry for shipment within the next three months is all of $22.50 to $22.75, Pittsburgh.

**Steel.**—The market is very strong, but a little more Steel is being offered, in some cases by Open Hearth works that have surplus Steel and are offering it in the market. Domestic Bessemer Billets and Sheet Bars can be laid down at $32.50 to $32.75, Pittsburgh. There is a heavy demand for Open Hearth Steel and High Carbon Open Hearth Billets. Carbons running 0.45 to 0.60 per cent. have sold at about $40 a ton.

*(By Mail.)*

Generally speaking, the condition of the Iron market is satisfactory, but at the same time it is a fact that demand on some lines of Finished Material, such as Sheets, Tin Plate, Wire and Wire Nails, has fallen off a good deal and the tone of the market on these products is easier. In Structural Material, Plates and Pipe there is a very heavy demand and price are strong. Tonnage usually falls off at this season and it is evident that this year will be no exception. In Pig Iron and Steel conditions are the same as we have noted in this report for some months. Prompt deliveries of Pig Iron are very difficult to obtain, and the situation in this respect was considerably aggravated by the recent strike at the furnaces in the valleys. Bessemer Iron for shipment in the next two or three months is very firm at about $21 at furnace, but much higher prices have been quoted for little lots for prompt shipment. Forge Iron has sold at $20.50 to $20.75, and No. 2 Foundry as high as $22.75, Pittsburgh, for early delivery. The wage scales have been fixed up with the exception of those of the American Tin Plate Company and American Steel Hoop Company. A conference is to be held with the first named company early next week, when it is likely the Tin Plate scale will be arranged, while the American Steel Hoop Company officials are to meet the Amalgamated Association Committee in a few days to arrange the Hoop and Bar mill scale. The fact that there will be no labor troubles in the mills this year is giving a good deal of satisfaction, as any general shut down of the mills would soon make the situation very much worse regarding deliveries than it is now. In this connection we may note that Carnegie Steel Company and Jones & Laughlins, Limited, have given labor, with the exception of tonnage and salaried men, an average advance of 10 per cent.

**Ferromanganese.**—Foreign Ferro has the call entirely now in this market, as no domestic is being made here. We quote German Ferro at $49 and English at $50 for large lots, delivered in the Pittsburgh District.

**Plates.**—Tonnage is heavy, and while the official price is 1.60c., this applies only on contracts for indifferent delivery, as mills who can ship out within two or three months have no trouble in getting from 1.75c. to 1.85c., Pittsburgh, and sales are being made right along at these prices. The Eastern market on Plates is relatively higher than the local market. Two of the leading local mills continue to quote on the basis of 1.60c., but will not promise deliveries before next year. Official prices are as follows: Tank Plate, ¼ inch thick and up to 100 inches in width, 1.60c. at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plate more than 100 inches wide, 5c. extra per 100 lbs. Plate 3-16 inch in thickness, $2 extra; gauges Nos. 7 and 8, $3 extra; No. 9, $5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms, net cash in 30 days.

**Structural Material.**—The scarcity of Structural Material for early shipment seems to be getting worse, and sales of Beams at 2.50c. to 3c. are almost of daily occurrence. A good deal of tonnage is being figured on and the Bridge and Structural shops are filled up with work for months ahead. The official price on Beams of 1.60c. is only nominal, as most of the tonnage being placed is at very much higher figures. We quote as follows: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.50c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh. Mills and dealers who can make reasonably prompt deliveries have no trouble in getting 2½c. to 3c. per lb. for Shapes.

**Muck Bar.**—The market is very firm, and we quote best grades of Muck Bar at $36.50 to $37, Pittsburgh. A sale of 100 tons is reported at the lower price.

**Steel Rails.**—It is said that the Pennsylvania Railroad will soon place an order for about 175,000 tons of Rails for 1903 delivery. Recent contracts given out include 50,000 tons placed by the Illinois Central and 10,000 to 15,000 tons by the Missouri, Kansas & Texas road. It is claimed that about 800,000 tons of Rails in all have already been placed for next year's delivery. We quote at $28, at mill, for Standard Sections, and note that very high prices continue to be paid for Light Section Rails.

**Bars.**—Reports of some unevenness in prices on Iron Bars among some of the Western mills and jobbers are current here, but the local market on Iron Bars is very strong at the fixed price of 1.80c., and for early delivery 1.90c. to 1.95c. is said to have been done. Some former users of Iron Bars have gone back to Steel on account of the lower price of the latter. Tonnage in Steel Bars is only fair and a good many contracts expire on July 1. It is probable that consumers whose contracts run out will buy in carloads or smaller quantities, as there is no incentive to make contracts, the price of 1.60c. applying on carloads. We quote Steel Bars at 1.60c., half extras, for carloads and larger lots, while small lots bring 1.70c. to 1.75c. All specifications for less than 2000 lbs. of a size are subject to the following differential extras: Quantities less than 2000 lbs., but not less than 1000 lbs., 0.10c. per lb. extra. Quantities less than 1000 lbs., 0.30c. per lb. extra, the total weight of a size to determine the extra, regardless of length. We quote Iron Bars at 1.80c., Pittsburgh, extras as per National Bar Iron Card.

**Sheets.**—A slightly better demand for Black Sheets is reported, but Galvanized are dull and there has been some easing off in prices. So much new capacity in Sheets has come on the market and output is so large that any let up in demand would probably be followed by lower prices. We quote Black Sheets, box annealed, one pass through cold rolls, at 2.90c., and No. 28 at 3c. for carloads and larger lots. For small lots No. 27 is quoted at 3.10c. to 3.15c. and No. 28 3.15c. to 3.25c. We quote Galvanized Sheets in carloads and larger lots at 70, 10, 5 and 2½ off. Small lots are 70 and 5 off. These prices are f.o.b. at mill.

**Merchant Steel.**—Reports are still current that prices on some of the higher grades of Crucible Steel are be-

ing more or less shaded, competition among the mills just now being quite keen. We quote Tire Steel at 2.25c. to 2.30c.; Sleigh Shoe, 2.25c. to 2.30c.; Open Hearth Spring, 2.50c. to 2.60c., and Toe Calk, 2.35c. to 2.45c. All these prices are for carloads and are f.o.b. at mill. Crucible Tool Steel, in which prices are more or less uneven, is quoted at 6½c. to 8c. and 9c. for ordinary grades, at mill. Shafting is 50 per cent. off in carloads and 45 per cent. in less than carloads, delivered in basing territory.

**Boiler Tubes.**—We note a continued heavy demand, but there has been no change in prices. Locomotive shops all over the country are filled up for months and using large quantities of Tubes. Discounts in carloads are as follows:

| *Boiler Tubes.* | Up to 22 feet. |
|---|---|
| Steel. | Per cent. |
| 1 to 1½ inch, inclusive | 45 |
| 2¼ inch to 5 inch, inclusive | 62½ |
| 1¾ inch to 2½ inch and 6 inch to 13 inch, inclusive | 52½ |
| Iron. | |
| E to 1½ inch, inclusive | 42½ |
| 2¼ inch to 5 inch, inclusive | 50 |
| 1¾ inch to 2½ inch and 6 inch to 13 inch, inclusive | 40 |

**Skelp.**—There is a good demand, and the tone of the market is firm. We quote Grooved Iron Skelp at 2.15c. to 2.20c., and Sheared at 2.25c. Grooved Steel Skelp is held at 2.22½c. to 2.25c., at mill.

**Merchant Pipe.**—Prices on Pipe are said to be firmer than for a long time, and tonnage is very heavy. The leading mills are filled up for three or four months, and large orders are being placed right along. The growing demands of the country seem to be able to not only absorb the output of the older mills, but also of the new Pipe mills that have recently started. Discounts in carloads are as follows:

| *Merchant Pipe.* | Black. | Galvd. |
|---|---|---|
| ⅛ to ½ inch, inclusive | 60 | 48 |
| ¾ to 12 inch, inclusive | 67 | 55 |

**Scrap.**—A prospective consumer of heavy melting stock has recently come in the market and bought several round lots, forcing the price up several dollars a ton. We note sales of heavy melting stock for Open Hearth Steel works purposes of fully 15,000 tons, at prices ranging from $2.50 to $23, Pittsburgh, and the market to-day is very strong at the latter figure. No. 1 Railroad Wrought Scrap is $22 in net tons; Car Wheels, $21 gross tons; Cast Scrap, $18.50 to $19 in net tons, and prices on the latter are certain to be higher on account of the high prices of Pig Iron. Cast Iron Borings are $11.50 to $11.75 in gross tons; Wrought Turnings, $13.75 to $14 net tons; Old Iron Rails, rolling mill lengths, $27 to $27.50. We note sales of about 2000 tons of Old Iron Rails at about $27, Youngstown. Old Steel Rails for rerolling are $23.50 in gross tons. The local Scrap market has been more active in the past week than for a long time, and indications are that prices will be higher on acount of the heavy demand.

**Coke.**—Car supply is excellent and consumers are getting Coke as fast as they can use it. The *Courier* reports 20,653 ovens in the Connellsville region active and only 772 idle, output last week having been 249,933 tons and shipments 12,247 cars. We quote Connellsville Furnace Coke at $2.25, and Foundry at $2.75 to $3. Most of the large Coke operators have their entire output under contract, and Blast Furnace Coke for prompt shipment has sold as high as $2.75 to $3 a ton.

---

The offices of the United States Fire Proofing Company have been removed to the Keystone Building, Fourth avenue, Pittsburgh, Pa.

---

**The Steel Car Suits.**—At Pittsburgh, on Monday, June 23, an opinion was handed down in the United States Circuit Court in the case of the Pressed Steel Car Company against John M. Hansen, an action to restrain the defendant from disposing of six patents and applications for patents. The court allows Mr. Hansen, now president of the Standard Steel Car Company, to make assignments of these, subject to the final decision of the court. It is also ordered that the applications for patents shall be placed in the hands of an attorney from each side, pending the final granting of the patents.

## Birmingham.

BIRMINGHAM, ALA., June 23, 1902.

The only change in the Iron market since the last letter has been toward a still further hardening in values. There is the same keen demand for prompt and nearby delivery that has prevailed, but there is no corresponding desire under existing circumstances to encourage it. The price is all right, but we are at the threshold of the new scale year, and the uncertainty attaching to anticipated demands makes the seller feel doubtful as to the solidity of the ground on which he is standing. Hence there is a disposition to await the signing of an agreement that will eliminate perplexing elements of uncertainty as to cost of production. And this is to occur at the conference "now on" between the operators and operatives. Each side is pretty well aware of the desires of the other, and there will, it is anticipated, be a good deal of skirmishing done before an agreement is reached. One of the principal demands to be made on the part of labor is for an eight-hour day. That will be earnestly contended for, because if it is successful it will win to the labor union ranks a large accession of members and solidify and strengthen greatly the United Organization. Success would not otherwise benefit the miner, individually, for his wages depend not on the hours he is to labor, but on the tonnage he secures, so that that contention has the appearance of friendly interest only in the bettering of the condition of those who labor for a certain daily wage. An increase in the maximum price of mining will probably be asked. That will be resisted, and the records will be produced to show that at the maximum of 55c. now prevailing the average earnings of the miner is less (certainly no more) than when he was paid 37½c. This shows a diminution of diligent labor as wages are increased, and operators contend that the increase of pay produces no increase in output, and brings no benefit to them in any way. The contention for a two weeks' pay day will probably be conceded. Its only objection is the extra work its adoption entails. Until these points are settled sellers of Iron are cautious as to sales. They are face to face with them now, and have in mind the fact that from the annual meeting until after the Fourth of July, but little work is done. Production is lowered and transactions are materially lessened. We can therefore anticipate a decreased business for the next fortnight, with frantic appeals and increased bids for Iron. There were sales of No. 2 Foundry at $19 for spot and nearby delivery, and there were sales of that grade at $19 running into the last quarter of 1902. For No. 1 Foundry $20 was bid, but so far as could be learned was declined, because it was not available at the moment, and sellers did not care to be tied up any more on deliveries with the uncertain outlook ahead of them. No. 3 Foundry is $18. No. 4 Foundry would bring $17.50 and Gray Forge $17. It should be borne in mind that even at these prices only very limited quantities can be obtained, and there is more or less luck in striking conditions favoring buyers' wants. It still looks as if conditions favor higher prices, and $20 for No. 2 Foundry is certainly very probable in the immediate future, and would cause no surprise here.

There is rather an increased inquiry for 1903 Iron, but transactions have been limited. Some are asking on the basis of $17.50 for No. 2 Foundry, but no transactions at that price are being reported. The bulk of that business has been, so far, on the basis of $16 for No. 2 Foundry. And it can be said that sellers are discriminating as to buyers, and favoring only those who do not "lay down" when their foresight has misled them. There is still more or less effort on the part of buyers who are disappointed in their deliveries to obtain Iron in the open market. When successful they still cling to what is due them and decline to release sellers.

There is nothing to be said of special interest concerning Steel, and nothing concerning the furnace and Steel plant of the Alabama Steel & Wire Company. The Sheelers are not inclined to give, as yet, any definite information as to their plans. There are plenty of rumors afloat concerning the enterprise, but their desire to be let alone during their days of labor preceding the

birth of their project is respected. It can only be a short time now before *The Iron Age* will be able to give authentic information.

The Coal and Coke business continues to make a fine showing. The railroads have been freely stocking up on the former, while the latter finds ready buyers. The bare announcement of Coke for the market sets the buyers to prompt action.

There was trouble the past week at the Birmingham Machine & Foundry Company, but it cost the works the loss of but a few men, whose places can be easily supplied. The question involved was the one so often fought over, and involved the propriety and the right of the employer to manage his affairs free from the unasked and undesired interference of the union. The matter is being considered by the local lodge, and if the men are called out sympathetic action will be invoked to make the strike effective. The men who live by their labor will foot the bill, and the agitator who stirs up dissatisfaction on all kinds of pretexts will pocket his regular salary. The lack of sufficient labor to meet demand for it has been frequently mentioned in these letters. For common labor the negro has been and is our main dependence. But he is migratory, and free transportation and promises are a glittering bait he cannot resist. The railroad contractors have had their agents at work secretly in the district, and have persuaded a large contingent to "fresh fields and pastures new." Some of our important industries are seriously hampered because of the prevailing scarcity. Efforts to supply it from other fields are not encouraging. Skilled labor, too, is, in supply, far below the demand for it. When the new enterprises in contemplation are ready for operation the most vital question will be the securing of the requisite labor to man the works.

## Metal Market.

NEW YORK, June 25, 1902.

**Pig Tin.**—There has been a fluctuating market throughout the entire week. The tendency has been toward a lower level. Last Friday and Saturday prices were forced up to the highest point, but on Monday a reaction set in, since which after each rally the market settled back a little lower. The closing prices to-day were as follows: Spot, 28.25c. to 28.50c.; ex-stock this week was offered at 28.20c.; June, 28c. to 28.25c.; July, 27.50c. to 27.75c. The London market acted in the same way, closing to-day £125 10s. for spot and £121 10s. futures. Sales from the East were liberal during the week. Arrivals thus far this month foot up to 2889 tons and it is estimated may reach as high as 4000 tons for the entire month.

**Copper.**—The market has been very weak, and prices have declined. For consumptive needs demand was very light. Speculative trading on the exchange was quite active, however, and the business transacted there was composed principally of two large lots, one of 750,000 lbs. of Electrolytic for July, August and September, sold at 12.15c., and one of 100,000 lbs. casting for June and July delivery at 12c. Closing prices to-day were as follows: Lake, spot, 12c. to 12.40c.; June, July, August and September, 12c. to 12.35c.; Electrolytic spot to September, 11.90c. to 12.12½c.; Standard, 11.50c. to 11.80c. London shows quite a decline for the week closing to-day, £52 17s. 6d. for spot and £53 for futures. Best Selected declined 10 shillings to £58.

**Pig Lead.**—There is no change to be noted. The American Smelting & Refining Company quote Desilverized on a basis of 4.12½c. spot, and 4.10c. for 15 days, New York delivery. The London market has declined 2 shillings 6 pence to £11 2s. 6d.

**Spelter**—Continues firm, with a fair business doing. Spot is still nominally quoted 4.87½c., and St. Louis quotes 4.70c. to 4.75c. The London market declined 2 shillings and 6 pence to £18 12s. 6d.

**Antimony**—Is firmer, owing to a £1 advance in London. Hallett's is now quoted 8.37½c. and Cookson's remains unchanged at 10.25c.

**Nickel**—Is unchanged; ton lots are quoted at 50c.

**Quicksilver.**—Prices are on a basis of $48 per flask of 76½ lbs. in lots of 56 flasks or more.

**Tin Plates.**—The market is unchanged. The American Tin Plate Company are quoting for delivery until October 1 on a basis of $4.19 per box of standard 100-lb. Cokes, f.o.b. New York, or $4 f.o.b. Pittsburgh. Quotations from Swansea show a decline of 1½ pence to 13 shillings 6 pence.

## New York.

NEW YORK, June 25, 1902.

**Pig Iron.**—The only business which is transpiring in this market is for small lots for prompt delivery, which continue exceedingly scarce and command high prices. We publish elsewhere a series of telegrams which show the present condition of the furnaces which use more or less Anthracite Coal. Quotations for summer delivery are as follows: Northern Iron, at tidewater, No. 1 X, $23.50 to $25; No. 2 X, $22.50 to $23.50; No. 2 Plain, $21.50 to $22. Tennessee and Alabama brands are quoted as follows: No. 1 Foundry, $22.50 to $23.50; No. 2 Foundry, $21.75 to $22.50; No. 3 Foundry, $21 to $21.25.

**Cast Iron Pipe.**—The Eastern shops continue to be troubled by scarcity of raw material, and with order books filled are turning away the liberal amount of business which is being offered. Among the inquiries in the market is one lot of 2600 gross tons for an enterprise in the vicinity of this city.

**Steel Rails.**—Eastern mills do not report any fresh sales of magnitude. An interesting transaction as bearing on the international markets is the sale by an English mill of 120,000 tons for delivery in Mexico to a railroad enterprise in the hands of Americans.

**Finished Iron and Steel.**—A good deal of additional work is coming up, and the scarcity of Structural Shapes is becoming more serious every day. Report has it that a leading German mill has sold its 1903 output for shipment to this country. We quote at tidewater as follows, but must add that for small lots and for prompt delivery much higher prices are being obtained for Structural Material and for Plates: Beams, Channels and Zees, 2c. to 2.25c.; Angles, 2c. to 2.25c.; Tees, 2c. to 2.25c.; Bulb Angles and Deck Beams, 2.10c. to 2.25c.; Sheared Steel Plates are 2c. to 2.10c. for Tank, 2.10c. to 2.20c. for Flange, 2.25c. to 2.40c. for Fire Box. Refined Bars are 1.95c. to 2c.; Soft Steel Bars, 1.95c. to 2.05c.

## The Anthracite Coal Strike and Pig Iron Production.

It is well known that the strike of the miners in the anthracite coal regions has considerably embarrassed the manufacturers of pig iron in the Schuylkill and Lehigh valleys. In at least one instance it has prevented the blowing in of a furnace which was ready for operations. Of course, the furnaces turned promptly to coke, but it has been found that the supply is not by any means as satisfactory as was expected.

We are indebted to the furnace companies for the following series of telegrams in response to an inquiry. It should be taken into account that the status on any one day does not absolutely reflect the condition of affairs. Furnaces in the valleys have been banked for a few days until fuel has accumulated to a sufficient extent to permit of blowing for a brief period. However, the news printed below furnishes the latest information:

### Schuylkill Valley.

Warwick Iron & Steel Company, Pottstown, Pa.: Neither furnace banked. In full operation.

R. Heckscher Sons Company, Swedeland, Pa.: Both furnaces running full all this month.

E. & G. Brooke Iron Company, Birdsboro, Pa.: Both furnaces running; one on coke, other on nearly all coke.

Temple Iron Company, Reading, Pa.: Our furnace is running all right on all coke.

Reading Iron Company, Reading, Pa.: Crumwold Furnace banked, owing to a breakdown. Keystone running on all coke.

Tidewater Steel Company, Chester, Pa.: We are not out of blast, but are on the ragged edge. Our stock of coke is now almost *nil*, as the railroads are slow, probably because of the unusually large movement

of soft coal eastward. The railroad movement is worse than during the winter.

**Lehigh Valley.**

Empire Iron & Steel Company, Catasauqua, Pa.: Two Crane, one Oxford, one Macungie, two Reading furnaces out of blast, on account of coal strike. We are only operating three furnaces.

Lehigh Steel & Iron Works, Allentown, Pa.: Our No. 1 furnace is in blast, using all coke.

Bethlehem Steel Company, South Bethlehem, Pa.: Have not banked or put out of blast any of our furnaces.

Thomas Iron Company, Hokendauqua, Pa.: Two furnaces are out of blast at Hokendauqua. There are banked one at Alburtis and one at Hellertown.

Allentown Rolling Mills, Allentown, Pa.: Our No. 2 furnace was blown out on May 22 for want of coal. Our No. 1 is still running, mainly on coke.

Carbon Iron & Steel Company, Parrysville, Pa.: Our furnace is still in blast. It has not been banked to date.

Joseph Wharton, Port Oram, N. J.: We have had no occasion up to the present time to bank any of our furnaces.

## The New York Machinery Market.

NEW YORK, June 25, 1902.

An advance of 10 per cent. has been made in the price of lathes by all the builders who became parties of New York agreement of two weeks. Notifications of the increase have been sent to the trade. In certain cases the advance has already gone into effect, in others it is to become operative July 1. It is thought in the trade that the effect of this move will be to bring about a general increase in prices of machine tools. Builders of machine tools are heartily in favor of seeing better prices owing to the increased cost of production. New York selling agents are afraid that prices can be put too high, stating that the demand in this market is not strong enough at this time to warrant as heavy an advance as 10 per cent. They also argue that the season of the year is inopportune, as placing prices too high will have a tendency to drive away the little summer trade that is expected at present values. The lathe builders, as well as makers of radial drills, who have advanced their prices, are protecting the dealers on such quotations as were out before the increases were made. There was a little talk of concerted action regarding planer prices, but nothing has developed as yet. In some quarters of the trade it is not thought that anything can be done in this branch of the industry owing to the policy of certain makers to hold entirely aloof from all agreements or actions of their contemporaries.

A prominent machine tool builder, who does not include lathes in his product, stated yesterday that he thought the action of the lathe and radial drill builders very commendable and that he could have signed the agreement without hesitation had he been a lathe or radial drill builder. He expressed a desire that similar action be taken in other lines of machine tools and said that even though the producers do not act jointly, he will take the initiative and stand out for better prices. He did not believe that advancing at this time would drive away any trade. Similar sentiments were expressed by a number of machine tool builders.

It may be interesting to such as are following the organization of the United States Shipbuilding Company to know that while a financial plan for the acquisition of the Bethlehem Steel Company has been practically decided upon, no official announcement outlining the plan will be made for a few days. It is rumored that a little difficulty is being encountered in financing the project as it now stands. This is said to apply particularly to the European end, where it was announced that a large part of the bonds had been underwritten.

Negotiations looking toward bringing into closer relationship the steam pump builders outside of the International Company are quietly being pursued. Several months ago work in this direction was commenced, but owing to internal friction enthusiasm eased up somewhat. Another attempt is now under way. The scheme, it is said, is simply to provide an arrangement whereby work can be distributed among the various shops so that each can work more efficiently.

Only two bids were received by the Director of Public Works of Philadelphia for the six gas engines and pumps to be erected in connection with the fire main system. M. R. Muckle, Jr., & Co. of Philadelphia submitted the lower bid, $116,242. The Deane Steam Pump Company of Holyoke, Mass., were the other bidders with $119,340. The specifications called for four 1200 gallon per minute vertical triplex double acting piston or plunger pumps, connected to vertical three-cylinder gas engines, and for two 350-gallon pumps and engines of the same type. For additional single outfits the first bidder named $20,957 for 1200-gallon sets and $9378 for 350-gallon sets. The Deane bid for extra sets was $22,550 and $10,275 respectively.

J. Hampton Dougherty, Commissioner of the Department of Water Supply, Gas and Electricity of New York City, will soon ask for bids for about $581,000 worth of improvements to be made to the Brooklyn Water Works. About $200,000 is to be expended on a new filtration plant at the Hempstead reservoir. At Milburn new pumps and boilers will cost $97,000. Driven wells, &c., will cost approximately $104,000, and new mains are to cost $175,000. For sinking test wells $5000 will be spent.

Thayer & Co., 39 and 41 Cortlandt street, have just been awarded an additional boiler order by the Lackawanna Steel Company for installation in the new Buffalo plant. It calls for an aggregate of 17,000 horsepower of Cahall vertical boilers. This is one of the largest boiler orders placed this year. It makes the total boiler horse-power purchased by this concern from Thayer & Co. 40,000.

At their branch office, 1500 Grand avenue, Kansas City, Mo., Ford, Bacon & Davis of 149 Broadway, New York, are preparing plans for a $2,000,000 power station to be built for the Metropolitan Street Railway Company of Kansas City. This project has been under consideration for a long time, but the company have just decided to proceed with the work. Options have been secured on 3 acres of land, which will afford an excellent site.

It is reported in the street that the Norfolk & Western Railway Company contemplate the erection of new shops at Portsmouth, Ohio. The New York offices of the company are at 40 Exchange place. E. T. Burnett is the purchasing agent, with headquarters at Roanoke, Va.

At the recent annual meeting of the Rome Locomotive & Machine Works of Rome, N. Y., it was decided to enlarge the plant considerably. We are informed, however, that no definite plans have been prepared as yet. The following officers and directors were elected: President, H. Monkhouse; vice-president, H. D. Cook; secretary, W. P. D. Hamon; treasurer, Arthur Whyte; other directors, T. B. Kent, A. C. Soper and C. S. Truax.

C. A. Chapman of Geneva, N. Y., is the leading spirit of the Geneva Alloy Company, who will equip a plant at Geneva. Inquiries are now out for lathes, milling machines, grinders, hack saws, shapers, drill presses and a forge plant. The new concern are to produce a new alloy said to possess strength and at the same time produce a finished part, doing away with machine work.

The Jeanesville Iron Works Company, Jeanesville, Pa., have purchased the structural steel work, and will commence the construction of their new plant between Jeanesville and Hazleton, Pa., at once. The main building will be 106 x 540 feet, and will be arranged for electric traveling cranes, &c. None of the machinery equipment has been purchased as yet.

W. K. Hodgman, treasurer of the Huber Printing Press Company of Taunton, Mass., confirms the report that the company will erect large new shops. Mr. Hodgman states that the main building will be 90 x 512 feet. A full line of machine tools capable of turning out the finest kind and largest work will be purchased. No engines or boilers will be required, as the electric power used will be obtained from the municipal plant. The capital stock of the company has been increased to $240,000.

## Canadian News.

**Protectio n Against German and American Goods.**

TORONTO, June 21, 1902.—The resolutions passed at the congress of the Canadian Boards of Trade were laid before Sir Wilfrid Laurier on the eve of his departure to attend the coronation and the colonial conference. He made no promises that he would advocate the measures the congress had approved, but showed himself dubious as to the value of one or two of them, particularly that calling for a tariff concession from Great Britain. He asked some of the manufacturers in the deputation if they would consent to have their protection lowered in order to give Britain a *quid pro quo*. Robert Munro, president of the Canadian Manufacturers' Association, told Sir Wilfrid that the manufacturers would be willing to have the preference to Great Britain increased from its present rate of 33 1-3 per cent. to 50 per cent. He explained that he meant, not that the existing tariff should be cut to such a degree in Britain's favor, but that the general tariff should be first raised in accordance with one of the resolutions passed at the congress, and that a preference of 50 per cent. on that should be allowed to the mother country. The resolution in question urges the alteration of the tariff so as to meet the high duties of foreign countries.

**Steel Rails at the Sault.**

F. H. Clergue stated in Ottawa a few days ago that the steel plant at Sault Ste. Marie was turning out rails at the rate of 500 tons per day, and that the daily output will be almost immediately increased to 600 tons. Thirty-five thousand tons will be delivered the present season to the Dominion Government on the intercolonial contract. Canadian orders, he says, have been booked for 100,000 tons. He expects the Canadian demand to keep the works going for some time. Americans, Mr. Clergue added, are underselling him in the Canadian market by $7 a ton.

In a recent communication to a leading citizen of Owen Sound who is interested in the construction of the Manitoulin & North Shore Railway now being built by the Clergue syndicate, Mr. Clergue said: "Construction of the smelter required by the Manitoulin contract was commenced within due season, and the first unit is now ready for operation. Our agreement requires a 300-ton smelter, but we are building one of 500 tons capacity, in this respect, as in all others, much more than performing our agreement."

**Canadian Mining Institute at Sherbrooke.**

There were two meetings of the Canadian Mining Institute at Sherbrooke, Quebec, a few days ago. The object of them was to promote the development of mining in the Eastern townships. There were papers and discussions on drills and other mining implements. A descriptive map of 15 copper properties in the vicinity of Sherbrooke was presented by the member who had prepared it. The establishment of a customs smelter was strongly urged. Sherbrooke was the place considered most suitable for such an industry, as it is in the heart of the copper district and five railways intersect there. A committee was appointed to consider what measures should be taken, and to communicate with the Quebec Government to obtain aid.

**Minor Notes.**

The steamship "Anatolia," from Antwerp, has arrived in Montreal harbor with 1200 tons of steel plates for the grain elevators being constructed at Montreal and Fort William. This shipment is but a small portion of the order placed by the contractors. English and Scotch makers were unable to supply the plates within the time specified.

The Nova Scotia Steel Company have large orders from both the Canadian Pacific Railway Company and the Grand Trunk Railway Company for steel car axles.

The rate payers of Welland voted some days ago upon the by-law authorizing the municipality to exempt from taxation the plant which the Welland Steel Company propose to establish there. The by-law was carried practically unanimously, but one vote being cast against it.

The steamer "Varuba" is loading 1200 tons of steel at Sydney to carry to Montreal. The steamer "Memnon" arrived at Montreal the other day with 4000 tons of Sydney pig iron. C. A. C. J.

## The Tin Plate Scale.

A conference will be held in New York on Monday, June 30, between officials of the American Tin Plate Company and the Amalgamated Association, for the purpose of arranging the tin plate scale for the year commencing July 1, 1902. The American Tin Plate Company will be represented in the conference by Warner Leeds, third vice-president, and by the district managers, consisting of J. R. Philipps, William Banfield, Cecil A. Robinson and Berthold Goldsmith. The base of the scale has already been fixed, and remains at $4.20 a box, and for each 10 cents advance per box in the price of tin plate there shall be 2 per cent. advance in wages. No agreement has been reached on the foot notes, and these will be considered at the coming conference. In addition to the 23 foot notes now in the tin plate scale, seven new ones have been proposed by the Amalgamated Association, commencing with No. 24, as follows:

24. That the screw boys do not bundle any scrap ends, scrap to be bundled by the company.

25. That all tin mills be paid at least every two weeks.

26. That we ask for Cleveland scale and the conditions governing mills granted at the Cleveland conference.

27. That when in the judgment of the manager and Mill Committee the work is too heavy for the catcher the company to furnish helper.

28. That when dirty bars are supplied for tin mills the company shall furnish a man to sweep them and the crew shall not be held responsible for dirty iron. The crew shall be paid for production per mill for such iron put in by the company.

29. That no more level hand jobs be given in tin mills, and level hand men be singled out as soon as vacancy occurs.

30. That ten (10) per cent. extra shall be paid for 40 gauge when doubled three (3) times.

**The Colonial Foundry & Machine Company.**—The Norwalk Pattern & Mfg. Company of South Norwalk, Conn., manufacturers of wood and metal patterns, furnaces, ranges, &c., and general iron founders, and the L. J. Wing Mfg. Company of New York City, manufacturers of steam, gas and gasoline engines, disk fans, air compressors, &c., have consolidated under the name of the Colonial Foundry & Machine Company, who were recently incorporated with a capital stock of $100,000. The plant of the Wing Company will be moved to East Norwalk and combined with that of the Norwalk Company, which will be enlarged to twice the present capacity and equipped with considerable new machinery, some of which has not yet been purchased. Among the immediate requirements are a crane, a drill press and a lathe. The proposed improvements include the erection of a new machine shop, 40 x 125 feet, plans for which are already prepared, and a substantial addition to the foundry. Besides the main office at East Norwalk, the company will maintain an office and salesroom at 251-253 West Broadway, New York City. The officers are William M. Brewer of Shenandoah, Pa., president; L. J. Wing of New York City, secretary and treasurer; Charles H. Aisthorpe of South Norwalk, manager of works and construction, and Norman Hatchman of South Norwalk, assistant manager.

The Society of Naval Architects and Marine Engineers, 12 West Thirty-first street, New York, have issued a special notice, stating that the council is authorized to offer a prize not exceeding $200 in value for the best paper upon some subject directly pertaining to naval architecture or marine engineering. Papers submitted in competition for the prize must be sent to the secretary before October 1, and should be plainly addressed and marked in one corner, "For Prize Competi-

tion," and underneath the motto or other distinguishing title of the sender. In a sealed envelope similarly addressed should be inclosed the name of the sender and his motto or distinguishing title. The papers are for the tenth annual meeting, to be held in November.

## PERSONAL.

George Harbin of Youngstown, Ohio, has been appointed district vice-president of the Amalgamated Association to fill the vacancy caused by the recent resignation of John F. Ward.

Charles M. Schwab, president of the United States Steel Corporation, has donated $60,000 for the building of a chapel at the Pennsylvania State College, near Bellefonte, Pa.

Walter Scranton and Moses Taylor of the Lackawanna Steel Company have become directors of the Marine National Bank of Buffalo, N. Y.

J. Gillespie, secretary and treasurer of the Lockport Iron & Steel Company of Pittsburgh, has sailed for Europe on a three months' trip.

Arthur J. Hall of Carl Spaeter, Coblenz, representing the Rombach, Differdingen and Kreuttingen works of Lorraine, is among the recent arrivals in this country.

L. K. Hirsch, Chicago, accompanied by his wife, arrived at San Francisco on June 1 from the Orient. Mr. and Mrs. Hirsch have been making the circuit of the world and are now in Yellowstone Park. They will return to Chicago within a week or so, after an absence of nearly a year.

F. A. Estep, president and treasurer of the R. D. Nuttall Company, gear manufacturers of Pittsburgh, has sailed for Europe for the purpose of attending the street railway convention, to be held in London the first week in July.

Cal. Hirsch of the Cal. Hirsch & Sons Iron & Rail Company, St. Louis, has sailed for Europe.

Prof. J. H. Kinealy has resigned the chair of Mechanical Engineering in Washington University, St. Louis, Mo., and will go to Boston as a member of the engineering firm of the Kinealy-Paul Company.

H. P. Converse, who has been manager of the structural steel department of G. P. Bullard & Co., Boston, starts in his own name as engineer and contractor.

A. B. Marble, who has been connected with the New York office of Jones & Laughlins, Limited, has been appointed New England agent, with headquarters at Boston.

George P. Bullard of Boston, who has held the agency in New England of Jones & Laughlins, Limited, of Pittsburgh for a series of years, has given up that representation, and is also liquidating the firm of G. P. Bullard & Co., of which he was sole partner. He proposes to give his entire time to the Eastern Expanded Metal Company of Boston, in which he has been largely interested for eight years, and in which he has now acquired practically the entire ownership.

E. G. Spilsbury, consulting engineer, of New York, is expected back from Germany early in July.

E. C. Converse of the United States Steel Corporation has been elected president of the Liberty National Bank of New York.

W. B. Rodgers has resigned as a member of the Board of Directors and local sales agent of the Monongahela River Coal & Coke Company at Pittsburgh. J. Herman Rodgers has resigned as manager of the sales department of the same concern. Both resignations will take effect July 1. William B. O'Neil has been appointed to the position vacated by J. Herman Rodgers.

James Rowland Bibbins has resigned as assistant electrical engineer of the Detroit United Railway to accept a position in the Westinghouse Company's publishing department, Pittsburgh and New York.

Walter Scranton of New York, president of the Lackawanna Steel Company, has been injured in a runaway accident at his summer home in Vermont.

Frank S. Layng, first vice-president, and Charles Scott, Jr., second vice-president of the Railway Spring Company of America, have been added to the Executive Committee of the company.

George A. Chalfant of Spang, Chalfant & Co., Incorporated, pipe manufacturers, at Pittsburgh, has gone to Europe.

Hugh Kennedy, for many years superintendent of the Isabella furnaces at Pittsburgh, now owned by the American Steel Hoop Company, will soon resign to become general manager of the Buffalo-Susquehanna Iron Company, who will build two large blast furnaces on Buffalo harbor, adjoining the new plant of the Lackawanna Steel Company. Mr. Kennedy leaves Pittsburgh after a continuous service of nearly 25 years in the iron business in that district. Since the formation of the United States Steel Corporation Mr. Kennedy has had charge of the furnace department of the American Steel Hoop Company. Previously he was manager of the Isabella furnaces for about 20 years, and before that time was assistant to his brother Julian, then manager of the Edgar Thomson blast furnaces at Bessemer.

H. C. Frick of Pittsburgh and family have gone to Prides, Mass., to spend the summer, where Mr. Frick recently bought a summer home.

Jacob Waddell has been appointed assistant to Jonathan Warner, district manager of the sheet mills of the American Sheet Steel Company in the Youngstown, Ohio, district.

A report is current that William Edenborn and E. C. Converse will resign from the Executive Committee of the United States Steel Corporation. We have not been able to verify these rumors.

## A New Tube Mill at McKeesport.

*(By Telegraph.)*

PITTSBURGH, PA., June 25, 1902.—A project is under way by which the United States Steel Corporation expect to secure a large tract of land lying between the National Tube Works proper and the Bessemer steel plant of that concern in McKeesport. If the land is secured it is the intention of the United States Steel Corporation to build a new tube works in McKeesport, and also remodel and enlarge the present National Tube Works plant. The Steel Corporation have been trying to secure this land for some time, but the owners ask such high prices for it that the negotiations at one time fell through. Citizens of McKeesport took the matter up and it now looks as though the Steel Corporation would secure the desired property at a reasonable figure. In case the land is not secured it is possible that the Steel Corporation will build a very large tube mill at Woodson, up the Monongahela River, where the corporation own about 200 acres or more of fine manufacturing property and which was intended originally as a site for blast furnaces and Bessemer steel plant, to be built by the W. Dewees Wood Company before that concern were absorbed by the American Sheet Steel Company.

It is possible that the plant of the Ohio Tube Company at Warren, Ohio, now owned by the National Tube Company, but which has not been operated for some time, may be bought by other parties and started up.

**The Hornellsville Truss & Cable Fence Company.**—Negotiations have been completed by which the works of the Hornellsville Truss & Cable Fence Company, at Hornellsville, N. Y., will be removed to Youngstown, Ohio. A new company will be formed under the name of the Youngstown Truss & Cable Company, with a capital of $100,000. At the head of the new company will be W. W. Bonnell, recently of the Finished Steel Company, at Youngstown, Carl Horix of the Geo. B. Sennett Company, at Youngstown, and W. A. Reade of Cleveland. The other incorporators are W. Scott Bonnell and C. D. Hine of Youngstown. The new works at Youngstown will be very much larger than the present plant at Hornellsville, and are expected to be in operation within six months.

The American Locomotive Company are said to be taking orders for locomotives for 1904 delivery.

## Iron and Industrial Stocks.

Interest has centered during the week in Colorado Fuel & Iron stock, which had a sharp decline, culminating on Tuesday in sales at 87½, from which, however, there was a recovery. There appear to be differences of opinion in the management as to the dividend policy. The meeting to decide the matter is being held to-day. United States common stock, which sold as low as 36¾ on Thursday last, has worked back somewhat, as has also the preferred. Report has it that the stock is under sharp bear fire. National Enameling issues have shown some weakness, the common selling down to 29½ on Tuesday and the preferred down to 84½. Tennessee Coal declined to 61½, but has recovered somewhat.

The plan to consolidate the properties and business of the Buffalo Iron Company of Nashville, Tenn., with the property and business of the Bon Air Coal, Land & Lumber Company, entitles the stockholders of the Buffalo Iron Company to receive in exchange for each $100 share of their ($350,000) preferred stock one share of new preferred stock and one share of new common stock and for each two shares of their ($700,000) common stock, one share of new preferred and one share of new common stock. The shareholders of the Bon Air Coal, Land & Lumber Company will receive for each share of this ($500,000) preferred stock one and one-tenth shares of new preferred stock and one and one-tenth shares of new common stock, and for each share of their ($500,000) common stock nine-tenths of a share of new preferred and nine-tenths of a share of new common stock. The directors of the two companies expect to complete the consolidation by July 1. The exchange of all the old shares upon the basis above named will require the issue of $1,700,000 each of new common and new preferred.

The Maryland Steel Company of Sparrows Point, Md., one of the constituent properties of the Pennsylvania Steel Company, are about to issue $600,000 of 5 per cent. gold bonds known as "Maryland Steel Company car trust bonds," in denominations of $1000. These bonds will be dated July 1, 1902, and are payable $60,000 at the end of each year, the entire issue being paid in ten years. The Maryland Steel Company reserve the right to retire any of the bonds at any interest period at 105 and interest, by giving four months' notice. The entire issue has been subscribed for.

The Pennsylvania Steel Company (of Pennsylvania) propose to issue $7,500,000 in 5 per cent. 30-year gold bonds, to cover in part the cost of blast furnaces and adjacent property at Lebanon, Pa., and an interest in the Cornwall Ore Banks in Lebanon County, Pa. This purchase was arranged at the time of the reorganization of the New Jersey company more than a year ago, but its consummation has been delayed owing to certain legal questions involved in the title to the Cornwall Ore Banks properties, which have recently been passed on by the Supreme Court of Pennsylvania. The proposed issue is not to be made by the Pennsylvania Steel Company of New Jersey, whose stock is listed on the Philadelphia Stock Exchange, but by the Pennsylvania Steel Company of Pennsylvania, whose stock is owned by the Pennsylvania Steel Company of New Jersey.

**Dividends.**—The regular semiannual dividend of 3 per cent. on the preferred stock of the Alabama Steel & Shipbuilding Company, guaranteed by the Tennessee Coal, Iron & Railroad Company, will be paid on and after July 1, 1902, at the Hanover National Bank, New York City.

The Westinghouse Electric & Mfg. Company have declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable July 1.

The Ashland Coal, Iron & Railway Company of Ashland, Ky., have declared a regular quarterly dividend of 1½ per cent., and an extra dividend of 2 per cent., payable forthwith.

The Washburn Wire Company have declared the regular quarterly dividend of 1¾ per cent. on their preferred stock, payable July 1 to stock of record June 21.

The Philadelphia Company of Pittsburgh have declared the regular quarterly dividend of 1½ per cent. on the common stock, payable July 21 to stock of record June 21.

The American Steel Casting Company have declared the regular semiannual dividend of 3½ per cent. on their preferred stock, payable June 30.

The American Shipbuilding Company have declared the regular quarterly dividend of 1¾ per cent. on their preferred stock, payable July 15.

The E. W. Bliss Company have declared the quarterly dividends of 2½ per cent. on their common stock and 2 per cent. on their preferred stock, payable July 1.

The directors of the Empire Steel & Iron Company have declared a semiannual dividend of 1½ per cent. on the preferred stock, payable July 15.

The directors of the National Fire Proofing Company of Pittsburgh have declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable July 12, to stockholders of record July 2.

The American Steel Casting Company, Chester, Pa., have declared the regular semiannual dividend of 3½ per cent. on the preferred stock, payable June 30, to stockholders of record June 20.

The Pittsburgh Malleable Iron Company of Pittsburgh have declared a regular quarterly dividend of 2½ per cent., payable July 10, to stockholders of record July 1.

The directors of the Standard Car Coupler Company have declared a regular semiannual dividend of 4 per cent. on the preferred stock, payable June 30, to stockholders of record June 16.

The directors of the Susquehanna Iron & Steel Company have declared the regular semiannual dividend of 3 per cent., payable July 14, to stockholders of record July 3.

The Vulcan Detinning Company have declared a dividend of 1¾ per cent. on the preferred and of 1 per cent. on the common stock.

## The Worcester Machinists' Strike.

WORCESTER, MASS., June 23, 1902.—There is no change in the aspect of the machinists' strike. A few strikers are at work again in their old places, but the number is quite inconsiderable. The places of the others are being gradually filled by outsiders, and except in one or two cases no inconvenience is caused the employers. The F. E. Reed Company's shop is filling up to its normal force for this time of year, and turning out a large product. Within a few days large shipments of engine lathes have been made by this company to European customers, an especially large order being for England. The Woodward & Powell Planer Company, P. Blaisdell & Co., Draper Machine Company, H. C. Fish Machine Works and L. Robbins, from whose establishments a few men went out, are doing business as formerly, without diminution of volume. Privately most of the strikers express regret that they ever went out and a desire to return to work again, but the influence of a few leaders and the acknowledged dread of being called a scab deter the men from carrying out their inclinations.

J. N.

Samuel J. Johnson died at his home in Mount Vernon, N. Y., Tuesday, June 10, of inflammatory rheumatism, after a short illness, in his fifty-second year. Mr. Johnson was head bookkeeper and cashier of the Union Nut & Bolt Company, with whom he had been for 30 years. When Mount Vernon became a city he was one of the Aldermen elected to the board. He served as a director of the Mount Vernon Hospital and secretary of the board.

The Youngstown Bronze Company have organized at Youngstown, Ohio, with a capital of $25,000, and will take over the present bronze plant of Morrison & Co., at Youngstown, and very much enlarge the works.

The National Enameling & Stamping Company of New York have purchased the H. Haller Mfg. Company, Limited, New Orleans, La. The business will be continued for the present under the same name.

# HARDWARE.

THE meeting of the American Hardware Manufacturers' Association, which was held at Atlantic City last week, had an important bearing on the work which it has to do. There has been more or less questioning in the minds of some manufacturers whether or not it will be found feasible for manufacturers with their very diverse interests to work in harmony, especially as there is in many matters a certain conflict of interest so that what would be an advantageous course or policy for one would not be advantageous for another. It is, however, generally conceded that the meeting which has just closed demonstrated that there are at least several important matters of common interest on which there can be work in entire harmony. There is little doubt, too, that as the association grows in numbers and experience there will be increased opportunities for exerting a beneficial influence on the trade, so as to correct, through united action, evils which cannot be successfully combated alone. Without making the matter at all prominent, there is no doubt that what the manufacturers have done in the way of resisting unreasonable payments for representation in jobbers' catalogues has tended to diminish what has long been an annoying practice in the trade. The almost universal opposition of manufacturers to the abuses connected with special or private brands is another matter now under advisement in which it is not unlikely that something may be accomplished, which will, while recognizing all reasonable claims of the jobber, protect the manufacturers and the trade at large. There are questions connected with syndicate buying which call for serious attention from the manufacturers, and the trade will await with interest developments in regard to this matter, inasmuch as, notwithstanding what may be said for the system as advantageous to those who avail themselves of its benefits—and this includes probably the large majority of the jobbing houses—it is certainly sometimes so applied and used as to tend to produce irregularity in prices and to the introduction of disturbing influences in the trade. There will be many other matters which relate to manufacturing methods and interests and have no direct relation to the question of distribution, in which the other departments of the trade are specially concerned. It is eminently proper that these and other questions should be considered by the manufacturers, and such action taken as will tend to protect and promote their interests. The manner in which these questions were taken up at Atlantic City indicates that the American Hardware Manufacturers' Association will take hold of them in a conservative and reasonable spirit, and will thus contribute to their settlement on a proper basis.

---

The retail merchants in many parts of the country have unquestionably grounds for complaint, in view of the sale of goods to their customers by many jobbing houses. Instead of being content to limit their sales to the trade, as they should be on the theory that they are distributers to the retail merchants, who in turn should be the distributers to the consumers, many jobbing houses have cultivated both the retail merchants and their customers. The extent to which this practice is carried in many sections of the country is made evident in the executive sessions of the associations of retail Hardware merchants, when they express themselves frankly on the subject, and tell of the very serious injury which their trade suffers on account of the practice. In some States it is not unusual to have the charge of this interference with retail rights brought against almost every jobbing house with whom the merchants have dealings. There is possibly some reason to believe that the lack of enterprise which sometimes characterizes the business methods of retail merchants is, in some part at least, due to the feeling of discouragement in view of this exceedingly troublesome competition, against which, unless indeed they are men of special resource and enterprise, they find it difficult to contend successfully.

This view of the case is taken by the writer of the following letter, who is a well-known Hardware merchant in Ohio:

> I notice three fine editorials in a recent issue of *The Iron Age*, in which the manufacturers and jobbers are highly commended for their enterprise in extending their business, while the retail merchants are referred to as being less progressive: "As a consequence there has been in many Hardware stores little progress, and in not a few actual retrogression. Some of this may be accounted for by the stress of diverse circumstances." Is not one of these diverse circumstances the fact that so many jobbers, after filling up the retailer, go after and get his customers? Is not this the reason why so many retail merchants lose their grip and become discouraged and let matters slide? Cannot something be done to keep the jobbers to their legitimate field—namely, the retail merchants—and leave the trade of the consumers for them to supply? This would be in accordance with the theory, if not the practice of the jobbers' association, as their secretary said in a public address that the right line for the distribution of Hardware is from the manufacturer to the jobber and from the jobber to the retailer and from the retailer to the consumer. At the same time he asked that information of any violation of this rule be given to their officers, and promised that they would go after the unruly member. In spite of this there is a disposition on the part of many jobbers to treat the retail trade very badly in seeking to divert the trade that naturally belongs to the latter to their own great establishments by soliciting orders from consumers continually and persistently.

The above letter describes a condition which certainly calls for correction. There is an inconsistency in the course of any jobbing house who solicit the trade of the retail merchant and at the same time go direct to his customers. The disclaimer which has been repeatedly made by officials of the National Hardware Association that such selling to consumers on the part of the jobbing trade is under the ban of their disapproval should facilitate the correction of a practice which involves a serious interference with the retailers' rights and interests.

---

## Condition of Trade.

The attention of the trade is divided now between matters connected with the closing up of the half year's business, the entrance on the vacation season and plans for the remaining months of the year. Notwithstanding the natural effect of the coming of one of the dullest months of the year we have to report a very satisfactory condition of business with a liberal placing of orders for future requirements. There has, indeed, been within the past week an increase in the volume of current trade, as the larger houses are at the present time apparently placing a good many orders with the manufacturers and endeavoring to secure a prompt and sufficient supply of goods for fall sales. The tenor of re-

ports from the principal centers is very satisfactory. The general trade feeling is certainly confident, and anticipations are freely expressed of a large and profitable fall business unless something unexpected occurs to interfere with the present excellent outlook. Manufacturers, as a rule, are full of orders, and most of the factories find difficulty in making shipments with even reasonable promptness. The tone of the market in the matter of prices is steady, and in some lines strong. There are only occasional indications that some parties have been ordering goods in excess of their requirements, apparently apprehensive that they might experience difficulty in having them executed, and in some cases they are asking that shipment be deferred. The changes in price are few, and, for the most part, in heavy goods which lie near the raw material. The export of Hardware and related products is somewhat affected by high prices ruling, and somewhat diminished quantities are going abroad.

### Chicago.

*(By Telegraph.)*

The prominent feature of the week has been the advance in heavy staple articles, such as Machine Bolts, Lag Screws, Heavy Hammers, Sledges, Wedges, Picks, Mattocks, &c. These articles have recently been appreciated about 10 per cent. by a decrease in discount. There have also been advances by some manufacturers in Tacks and Registers. No advance has been made in the price of Screws, but sales have been more conservative, with less cutting of legitimate prices, and the opinion seems to prevail that a more satisfactory market will be experienced throughout the fall. While there has been some further falling off in the volume of business transacted, there has been considerable activity in summer goods, such as Refrigerators, Ice Cream Freezers, Lawn Mowers and Screen Doors. The report is current that manufacturers of Lawn Mowers and Refrigerators are considering an advance in the price of these goods for next year and agents are confident that the contemplated appreciation will take place. There has been quite considerable increase in the placing of orders for fall delivery for such goods as Stove Boards, Elbows, Coal Hods, Lanterns, Axes, &c. In Heavy Hardware there has been an unusual movement for this time of the year, with liberal sales, especially of Finished Tires, Spring and other Steel. The situation of Nails and Wire has been unchanged, with a fair degree of activity for this season of the year. While there have been fewer small orders for Builders' Hardware, some important contracts have been placed during the week. The trade for Carpenters' Tools has been fair, and in such special lines as Bicycles dealers have been surprised by the continued flow of important orders.

### St. Louis.

*(By Telegraph.)*

The actual movement of Hardware products from this center is of about normal proportions for the season, but the demand for fall goods and the bookings for future requirements are very liberal and perhaps more so than is customary at so early a date. It is pointed out that with present conditions so favorable to most of the import products of the farm the outlook for business for the balance of the year is most encouraging. No weak spots seem to be anywhere in sight, and all of the jobbing interest are preparing themselves with a feeling of confidence in future conditions. Prices in all lines show a firm and in some cases a hardening tendency. The heavy departments of the market are showing these very favorable symptoms and the volume of business in hand is of very good volume. Some complaint is still heard on account of the delayed delivery of heavy material from the mills, but it is said that this does not have a serious effect on the present condition of demand. Prices in this department rule on a firm basis.

## NOTES ON PRICES.

**Wire Nails.**—Stocks of Wire Nails are beginning to accumulate at the mills, owing to the decrease in demand. Many mills will take advantage of this condition to close in July for the annual repair and clean up, which is required after a year of continuous operation. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| To jobbers in carload lots | $2.05 |
| To jobbers in less than carload lots | 2.10 |
| To retailers in carload lots | 2.10 |
| To retailers in less than carload lots | 2.20 |

*New York.*—Store demand for Wire Nails continues good, owing to the large amount of building in the territory tributary to this point. Quotations remain unchanged, as follows: Small lots from store, $2.30; carloads on dock, $2.18 to $2.20.

*Chicago, by Telegraph.*—There has been a fair run of orders for this season of the year and the situation seems to be well in hand, with prices well maintained by both manufacturers and jobbers, single carload lots selling at $2.20 and small lots at $2.25 to $2.30 from store.

*Pittsburgh.*—A good many contracts for Wire Nails expire on July 1 which were placed before the price was advanced to $2.05 per keg. It is probable demand for the next month or two will be confined mostly to carloads, as in the present condition of the market, with so much capacity available, it is not likely prices of Wire Nails will be higher. There is a fair demand, but not so large as some time ago, and the mills are making shipments. We quote Wire Nails at $2.05 in carloads, f.o.b. maker's mill.

*St. Louis, by Telegraph.*—The demand for Wire Nails is said to be a normal one for this season of the year and in the matter of quotations we can note no change. Carload lots are quoted at $2.25 and small lots from stock at $2.30.

**Cut Nails.**—The scarcity in Cut Nails continues in a modified degree and less trouble is experienced in getting prompt shipments than for some time. Iron Cut Nails are still difficult to obtain. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

| | |
|---|---|
| Carload lots | $2.05 |
| Less than carload lots | 2.10 |

*New York.*—Requirements for Cut Nails in the local market are about in the usual proportion to Wire Nails. Quotations for carloads and less than carloads are as follows:

| | |
|---|---|
| Carloads on dock | $2.18 |
| Less than carloads on dock | 2.23 |
| Small lots from store | 2.30 |

*Chicago, by Telegraph.*—The difficulty in obtaining ample supplies is still experienced and with a fair demand the market has continued firm. Prices have been without essential change, sales being made at $2.30 for small lots from store.

*Pittsburgh.*—It is said that Iron Cut Nails have sold as high as $2.25 a keg. It is almost impossible to get them at any price and the mills are insisting on consumers using Steel Cut Nails wherever possible. Demand for Cut Nails is only fair and we quote at $2.05 base in carloads and $2.10 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination, terms 60 days, less 2 per cent. off in 10 days.

*St. Louis, by Telegraph.*—Cut Nails are said to be in fair call and in the matter of prices small lots from store continue to be quoted at $2.40.

**Barb Wire.**—With the close of the first half of the year orders for Barb Wire are for small lots. Mills are in a position to make shipments without delay. It is reported that some mills are making slight concessions in price to stimulate business. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. for cash in 10 days:

| | Painted. | Galv. |
|---|---|---|
| To jobbers in carload lots | $2.60 | $2.90 |
| To jobbers in less than carloads | 2.65 | 2.95 |
| To retailers in carload lots | 2.70 | 3.00 |
| To retailers in less than carloads | 2.80 | 3.10 |

*Chicago, by Telegraph.*—There has been no special activity, but a fair volume of business for this season of the year, and the market has remained firm, Galvanized selling at $3.10 and Painted at $2.80 in carload lots, and 5 cents extra for small quantities.

*Pittsburgh.*—Orders are mostly for small lots, and the tone of the market is steady. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Painted, $2.60; Galvanized, $2.90; less than carload lots, Painted, $2.65; Galvanized, $2.95.

*St. Louis, by Telegraph.*—The lighter demand for Barb Wire expected at this season shows in the market for this product, but it is said that about normal conditions prevail. Painted is quoted at $2.90 and Galvanized at $3.20.

**Plain Wire.**—There are no new features in the Plain Wire market. Demand has fallen off, as usual at this season, and comparatively little new business is coming to the mills. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. for cash in 10 days:

| Base sizes. | Plain. | Galv. |
|---|---|---|
| To jobbers in carload lots | $2.00 | $2.40 |
| To jobbers in less than carload lots | 2.05 | 2.45 |
| To retailers in carload lots | 2.05 | 2.45 |
| To retailers in less than carload lots | 2.15 | 2.60 |

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 to 9 | Base | | | | $0.40 | extra. |
| 10 | $0.05 | advance | over | base | .40 | " |
| 11 | .10 | " | " | " | .40 | " |
| 12 and 12½ | .15 | " | " | " | .40 | " |
| 13 | .25 | " | " | " | .40 | " |
| 14 | .35 | " | " | " | .40 | " |
| 15 | .45 | " | " | " | .75 | " |
| 16 | .55 | " | " | " | .75 | " |
| 17 | .70 | " | " | " | 1.00 | " |
| 18 | .85 | " | " | " | 1.00 | " |

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

*Chicago, by Telegraph.*—The liberal orders still unfilled make the decreased current demand the more welcome, and the market has remained steady, without change in prices, the sales being made at $2.20 for jobbing lots from store.

*Pittsburgh.*—Current business is mostly for small lots, the mills running nearly altogether on old contracts. We quote Plain Wire at $2 and Galvanized at $2.40 in carload lots, f.o.b. Pittsburgh. Slight advances are charged for small lots.

*St. Louis, by Telegraph.*—Plain Wire continues in fair demand and jobbers quote No. 9 at $2.25 and Galvanized at $2.65.

**Hanger Screws.**—The following uniform list of Hanger Screws was adopted May 21, 1902, by all the manufacturers. It is subject to a discount of 70 and 10 per cent. on Gimlet Point and 70 and 15 per cent. on Cone Point:

| Length. | ¼ and 5-16 in. | ⅜ in. | 7-16 in. | ½ in. | ⅝ in. | ¾ in. | ⅞ in. | 1 in. |
|---|---|---|---|---|---|---|---|---|
| 2 inch | $3.00 | $3.60 | $4.24 | $5.06 | $6.19 | .... | .... | .... |
| 2½ " | 3.19 | 3.83 | 4.54 | 5.44 | 6.75 | $9.90 | .... | .... |
| 3 " | 3.38 | 4.05 | 4.84 | 5.81 | 7.31 | 10.73 | .... | .... |
| 3½ " | 3.57 | 4.28 | 5.14 | 6.19 | 7.88 | 11.55 | $15.00 | .... |
| 4 " | 3.75 | 4.50 | 5.44 | 6.56 | 8.44 | 12.38 | 16.00 | .... |
| 4½ " | 3.94 | 4.73 | 5.74 | 6.94 | 9.00 | 13.20 | 17.00 | .... |
| 5 " | 4.13 | 4.95 | 6.04 | 7.31 | 9.56 | 14.03 | 18.00 | $26.25 |
| 5½ " | 4.32 | 5.18 | 6.34 | 7.69 | 10.13 | 14.85 | 19.00 | 27.50 |
| 6 " | 4.50 | 5.40 | 6.64 | 8.06 | 10.69 | 15.68 | 20.00 | 28.75 |
| 6½ " | .... | 5.62 | 6.94 | 8.43 | 11.25 | 16.50 | 21.00 | 30.00 |
| 7 " | .... | 5.84 | 7.24 | 8.80 | 11.82 | 17.33 | 22.50 | 31.25 |
| 7½ " | .... | 6.06 | 7.54 | 9.17 | 12.38 | 18.15 | 23.44 | 32.50 |
| 8 " | .... | 6.28 | 7.84 | 9.55 | 12.95 | 19.03 | 24.37 | 33.75 |
| 9 " | .... | .... | 8.14 | 9.92 | 13.51 | 19.85 | 20.65 | 35.62 |
| 10 " | .... | .... | .... | 10.30 | 14.08 | 20.68 | 27.50 | 37.50 |
| 11 " | .... | .... | .... | .... | 14.64 | 21.50 | 28.75 | 39.38 |
| 12 " | .... | .... | .... | .... | 15.21 | 22.32 | 30.00 | 41.25 |

**Carriage Bolts, Machine Bolts, &c.**—At the meeting of the Bolt manufacturers, held last week in Atlantic City, some changes were made in discounts. Those announced by the association on the various lines are now as follows:

| | Discount. |
|---|---|
| Common Carriage Bolts | 60 and 5 % |
| Machine Bolts with H. P. or C. P. Plain Nuts | 65 % |
| Machine Bolts with C. & T. Nuts | 60 and 2½ % |
| Machine Bolts without Nuts | 65 and 10 % |
| Machine Bolts, Blanks | 65 % |
| Bolt Ends with H. P. or C. P. Plain Nuts | 65 and 2½ % |
| Bolt Ends with C. & T. Nuts | 60 and 5 % |
| G. P. Coach Screws | 70 and 10 % |
| Cone Point Lag Screws | 70 and 15 % |
| Skein Screws | 70 and 10 % |
| Forged Set Screws and Tap Bolts | 50 and 15 % |
| Plow Bolts and Guard Bolts | 60 % |
| Washer Head Coach Screws | 70 % |
| G. P. Hanger Screws | 70 and 10 % |
| Cone Point Hanger Screws | 70 and 15 % |

**Nuts.**—The following quotations represent the present price of Nuts, to the advance in which we referred in our last issue:

| | Off list. |
|---|---|
| Cold Punched Plain Blank Square Nuts | 4.50 |
| Cold Punched Plain Blank Hexagon Nuts | 4.60 |
| C. T. & R. Blank Square Nuts | 4.70 |
| C. T. & R. Blank Hexagon Nuts | 5.00 |
| Cold Punched Plain Tapped Square Nuts | 4.30 |
| Cold Punched Plain Tapped Hexagon Nuts | 4.40 |
| C. T. & R. Tapped Square Nuts | 4.50 |
| C. T. & R. Tapped Hexagon Nuts | 4.80 |
| Hot Pressed Square Blank Nuts | 4.80 |
| Hot Pressed Hexagon Blank Nuts | 5.00 |
| Hot Pressed Square Tapped Nuts | 4.60 |
| Hot Pressed Hexagon Tapped Nuts | 4.80 |

**Asbestos Paper and Packing.**—The manufacturers of Asbestos products, such as Mill Board and Building Papers, Wick and Rope Packings, &c., are making some low prices on this line of goods. Asbestos Paper 1-16 inch thick and thinner is being offered in less than ton lots as low as 2¾ cents per pound, while ton lots are marketed at a concession of ¼ cent per pound less and carloads at a concession of ½ cent. Mill Board in sheets in less than 500 pounds is obtainable at 3¾ cents per pound, with similar concessions for larger quantities. Mill Board thicker than 1-16 inch is 1 cent per pound higher than the above prices. Asbestos Packings, Wick and Rope, are sold regularly at prices varying from 18 to 15 cents per pound, while 1-ton and ½-ton lots can be had at 1 to 2 cents per pound lower, according to the source and quality of supply.

**Paris Green.**—During the past week there has been a noticeable falling off in the demand for Paris Green, resulting in a weaker market. The stocks in manufacturers' hands are not large, and some makers are only accepting orders from their regular customers. The season continues cool in the Eastern section of the country and vegetation consequently backward. With the event of continued hot weather the bugs may become more troublesome and an urgent demand may be experienced. Quotations are as follows:

| | Cents. |
|---|---|
| Arsenic kegs or casks | 12½ to 13 |
| Kegs, 100 to 175 pounds | 13 to 13½ |
| Kits, 14, 28 and 56 pounds | 14 to 14½ |
| Paper boxes, 2 to 5 pounds | 14 to 14½ |
| Paper boxes, 1 pound | 14 to 14½ |
| Paper boxes, ½ pound | 15 to 15½ |
| Paper boxes, ¼ pound | 16 to 16½ |

**Cordage.**—The demand for Rope continues moderate, orders representing immediate requirements. The distribution of substitutes for pure Manila and Sisal Rope continues to be a factor in the market, and has an effect upon unmixed goods. Prices on the basis of 7-16-inch and larger, for pure Rope, are 10 cents for Sisal and 13 cents for Manila, with a rebate from ¼ to ½ cent for large quantities, according to makers.

**Paints and Colors.**—*Leads.*—There has been a better demand again for White Lead in Oil, stimulated by the cooler weather. Manufacturers are now looking forward to their fall trade, which they anticipate will be large. Quotations are as follows: In lots of 500 pounds or over, 6 cents; in lots of less than 500 pounds, 6½ cents per pound.

**Spirits Turpentine.**—The price of Turpentine remains too high at this point to tempt large buyers, so that business is restricted to jobbing lots. Quotations are as follows, according to quantity: Southerns, 48¾ to 49¼ cents; machine made barrels, 49¼ to 50¼ cents per gallon.

# SOUTHERN HARDWARE JOBBERS' ASSOCIATION

## CONCLUDING REPORT.

THE sessions of the Southern Hardware Jobbers' Association, which began on Tuesday of last week, were continued until Friday afternoon, when adjournment was had after an exceptionally successful and enjoyable convention. The place of meeting in the Marlborough House, Atlantic City, afforded excellent facilities for the accommodation of the visitors and the holding of both joint and separate meetings of the jobbers and the manufacturers, who were in session at the same time. The large attendance of both of these great classes of trade contributed much to make the occasion a successful one, for it is acknowledged that the social element plays an important part in such gatherings. The programmme was admirably arranged so as to give ample time for recreation and for social contact in various ways.

### The Business Programme.

The association is to be congratulated on the few disappointments in the interesting programme relating to the discussion of trade questions. In this way a number of important subjects were brought to the attention of the convention and some of them called out interesting and suggestive debate. Questions concerning business management, the relations between jobbers and manufacturers, various methods of distribution, the effects of combinations, reciprocity in some of its bearings and other questions of general interest were thus brought to the attention of the delegates. Some of the papers in which these questions were discussed were presented in our last issue, and others are given in the pages which follow. There is obvious advantage in the consideration of these subjects in a broad and practical way, and these discussions, together with others more closely related to the special interests of the Southern jobbers, which were considered in executive session, were regarded as very profitable.

### Entertainment of the Convention.

In accordance with the plan which has been followed for a number of years there was a large and representative committee, made up principally of well-known traveling salesmen, on whom in general devolved the duty of looking after the pleasure and comfort of the members and their guests. This committee was constituted as follows under the efficient chairmanship of Irby Bennett:

IRBY BENNETT, Winchester Repeating Arms Co.
T. A. ALEXANDER, Yale & Towne Mfg. Co.
S. B. BISPHAM, Russell & Erwin Mfg. Co.
R. P. BOYD, John H. Graham & Co.
R. N. BARBER, Smith & Hemenway Co.
R. D. CARVER, Alabama Steel & Wire Co.
PERCY C. CAUTHORN, W. W. Crandall & Co.
H. L. DURELL, Harriman Hoe & Tool Co.
THOS. ELLIS, Iver Johnson's Arms & Cycle Works.
F. H. FORMAN, American Steel & Wire Co.
C. M. FOUCHE, Crucible Steel Co. of America.
L. C. FRAZER, Fayette R. Plumb, Inc.
J. S. FRENCH, Peters Cartridge Co.
ROBERT GARLAND, Standard Chain Co.
T. W. GATHRIGHT, E. C. Atkins & Co.
S. G. GILFILLAN, Belfont Iron Works Co.
J. J. GILMORE, American Steel & Wire Co.
N. A. GLADDING, E. C. Atkins & Co.
T. H. GOSSETT, Peck, Stow & Wilcox Co.
JOSEPH H. GRUBB, Hussey, Binns Shovel Co.
FRANK GUILDENER, Sargent & Co.
D. P. HALE, Standard Wheel Co.
GEORGE H. HARPER, Clendenin Bros.
GEO. L. HAVEN, P. & F. Corbin.
B. A. HAWLEY, Russell & Erwin Mfg. Co.
G. B. HOBSON, Tredegar Iron Works.
JOS. M. HOTTEL, G. & H. Barnett Co.
FRED. M. HUGGINS, Landers, Frary & Clark.
WALTER P. HUDSON, Russell & Erwin Mfg. Co.
ARTHUR S. JONES, Memphis, Tenn.
JAMES P. KELLY, Kelly Axe Mfg. Co.
GEORGE L. KNIGHT, Tubular Rivet & Stud Co.
CHAS. P. KING, American Iron & Steel Mfg. Co.
FELIX B. LIPPMAN, Adolph Kastor & Bro.
JESSE E. PUMPHREY, Standard Chain Co.
JOHN J. MAPP, National Enameling & Stamping Co.
O. C. MEAD, Mead & Smith.
GUY MITCHELL, Beers & Mitchell.
V. A. MOORE, Alabama Tube & Iron Co.
JNO. C. OLIVER, Oliver Iron & Steel Co.
W. J. ORR, Old Dominion Iron & Nail Works Co.
FRANK OUERBACKER, O. K. Stove & Range Co.
J. B. PARRENT, Yale & Towne Mfg. Co.
WALLACE L. POND, Nicholson File Co.
JAMES T. POWELL, Stanley Rule & Level Co.
A. C. LANGSTON, Jenkins Bros.
J. T. QUARLES, Lamson & Goodnow Mfg. Co.
HENRY F. REESE, Fairbanks Co.
J. W. RYAN, P. & F. Corbin.
H. G. REINICKER, Baltimore, Md.
JOHN S. SANDERS, Union Metallic Cartridge Co.
FRED S. SEELEY, Wiebusch & Hilger.
W. T. SHANNON, American Sheet Steel Co.
W. P. SMITH, Mead & Smith.
DAN. K. STUCKI, White Mountain Freezer Co.
J. P. TABB, Tabb Bros. & Co.
WM. TAYLOR, American Steel & Wire Co.
L. D. VOGEL, Charter Oak Stove & Range Co.
R. D. WADDELL, Dupont and Hazard Powder Companies.
D. M. WALKE, National Enameling & Stamping Co.
F. C. WHEELER, Hermann Boker & Co.
CHAS. H. WIER, Wier & Wilson.
JOHN K. WILSON, Wier & Wilson.
GEORGE P. WIER, Wier Bros.

Early in the session a special committee, consisting of the following gentlemen, was appointed to look after the entertainment features of the convention: Irby Bennett, Thomas Ellis, Robert Garland, N. A. Gladding, Joseph H. Grubb, Joseph N. Hottel and Walter P. Hudson. Their work was certainly admirably done and they succeeded in making the gathering one of the most enjoyable in the entire history of the association. The principal entertainments provided for the members and their guests were the sail on Wednesday afternoon, the parade in rolling chairs on Thursday afternoon on the board walk, in which more than 200 persons participated, the musical entertainment by the Welsh Chorus, followed by a dance on Thursday evening, and the banquet on Friday evening, to which reference is made below. In connection with all the courtesies extended H. H. Beers, the popular sergeant-at-arms, had a responsible and prominent part.

### Prosperous Condition of the Association.

The report of the secretary, which was made at one of the executive sessions, indicated a very satisfactory condition of things in the association. The year's work was carried out on the usual lines, with a gratifying growth in the number of members, an increase of five being reported. Among the various committees which have in charge much of the detail work of the association is the Transportation Committee, which was able to effect some changes which are regarded as serving the interest of the members in a definite and practical way.

### Representatives of the National Hardware Association.

The National Hardware Association was represented by W. W. Supplee, its first president and one of its wisest counselors, and T. James Fernley, its secretary-treasurer. From the wide acquaintance of these gentlemen and their familiarity with association matters in all their forms their presence contributed not a little to the success of the gathering, and at the closing session a special resolution of thanks was extended to them for their presence and advice.

### Twenty Years of Hardware.

In the session on Wednesday morning W. W. Supplee was called upon by the president to speak on the above subject, and made an interesting address, in which he referred especially to some of the many changes which have taken place during the period named. In connection with some personal reminiscences Mr. Supplee touched in a broad way on some of the fundamental business principles which find illustration in the

changes which are still in progress. He was followed by J. D. Moore, who, among other things, referred to the splendid catalogues which are now issued giving illustrations of nearly every Hardware article, and mentioned incidentally the first Hardware catalogue issued in 1850 by Russell & Erwin Mfg. Company. Mr. Moore also took occasion to refer to *The Iron Age* as the first trade paper, and contrasted its modest initial issue, published in 1855, with the mammoth edition of the present.

### The Closing Session.

This was held on Friday morning with a large attendance, and is referred to as an exceptionally interesting one. Beside the election of officers, the adoption of resolutions of thanks and reports of some special committees, there was an interchange of views in regard


to the work of the association and what had been accomplished at the meeting, as well as addresses by the newly elected officers. The meeting was an exceedingly harmonious one, and the convention came to a close in the best humor and with mutual congratulations on the part of the members.

### Election of Officers.

Most of the officers were re-elected. Universal approval was expressed of the course of the president, F. A. Heitmann, who was unexpectedly called to the chair on the retirement of J. D. Moore, and he was accordingly unanimously chosen for another term. It was decided also to have two vice-presidents instead of one, as during the past year. Bruce Keener at his special request was not asked to take another term as vice-president. The Advisory Board was enlarged, so as to consist of four members instead of two as heretofore. The officers chosen for the year are as follows:

President, F. A. Heitmann, F. W. Heitmann & Co., Houston, Texas.

First vice-president, Col. B. F. Eshleman, Stuffer, Eshleman & Co., New Orleans, La.

Second vice-president, John Donnan, W. S. Donnan & Co., Richmond, Va.

Secretary-treasurer, C. B. Carter, 117 Gay street, Knoxville, Tenn.

ADVISORY BOARD.

J. D. Moore, Moore & Handley Hardware Company, Birmingham, Ala.

W. E. Newill, King Hardware Company, Atlanta, Ga.

J. J. Mandlebaum, Fones Bros. Hardware Company, Little Rock, Ark.

G. W. Barnett, G. W. Barnett & Son, Montgomery, Ala.

EXECUTIVE COMMITTEE.

W. M. Crumley, Beck & Gregg Hardware Company, Atlanta, Ga.

O. B. Barker, Barker-Jennings Hardware Company, Lynchburg, Va.

Chas. H. Ireland, Odell Hardware Company, Greensboro, N. C.

C. E. Speer, Speer Hardware Company, Fort Smith, Ark.

### Souvenirs.

Many souvenirs were given out by the manufacturers, a practice which is more and more being observed at such gatherings. Among these the following may be mentioned:

Hussey, Binns Shovel Company, Pittsburgh: Miniature silver and gold plated Shovel.

Mayer & Co., Philadelphia: Flexible Manicure File.

Evansville Tool Works, Evansville, Ind.: Shingling Hatchet in fancy box.

Iver Johnson's Arms & Cycle Works, Fitchburg, Mass.: Ornamental silver Match Box.

McCaffrey File Company, Philadelphia: Album of views of Atlantic City.

Fairbanks Company, Baltimore: Silver pocket Pin Cushion.

Peters Cartridge Company, Cincinnati: Paper Weight made of Cartridges and Shells.

Nicholson File Company, Providence, R. I.: Ping Pong bat containing candy in fancy wrappings.

E. C. Atkins & Co., Indianapolis, Ind.: Interchangeable tool set.

Grafton Stone Company, Elyria, Ohio; Leather Pocket Book and Card Case.

Simonds Mfg. Company, Fitchburg, Mass.: Cigar Cutter.

### The Banquet.

The festivities connected with the Atlantic City conventions of the jobbers and manufacturers came to a fitting close on Friday evening with a banquet held in the spacious dining room of the Marlborough House. The guests, with the exception of those at the speakers' table, were seated at small tables, an arrangement which conduced much to the social enjoyment of the occasion. On assembling an appropriate address of welcome was made by F. A. Heitmann, president of the association,


who introduced Fayette R. Plumb as toastmaster. The bill of fare was as follows:

Martini Cocktails.
Little Neck Clams.
Green Turtle Soup.
Broiled Bluefish, Maitre d'Hotel.
Potatoes Natural.
Stuffed Olives. Sweet and Sour Gherkins.
Salted Almonds.
Calves Tongues, Braisé, Sauce Piquante.
Green Peas.
Lobster Sauté, à la Newburg.
Creme de Menthe Punch.
Roast Mallard Duck, Plum Jelly. Clicquot Brut.
French String Beans. Fried Hominy.
Fruit Salad.
De Brie Cheese. Toasted Bents Crackers.
Strawberry Ice Cream.
Fancy Cake. Fruit.
Café Noir. Cigars.

At the conclusion of the dinner attention was given to the toasts of the evening, and the guests listened to several brief addresses embodying an unusual amount of wit and wisdom. All the speeches indicated in the following list were made, except that of W. W. Supplee, who was unable to be present, but his place was admirably filled by Webster R. Walkley:

"Our Wives, Daughters and Sweethearts".....C. E. Speer
"The Lion and the Lamb".....J. H. Kennedy
"Our Distributers".....W. W. Supplee
"Pleasure in Business".....Irby Bennett
"Hardware Association".....T. J. Fernley

Pressure on our space will not permit us to give a report of the addresses. One of the hits of the evening was made by Mr. Kennedy, who, after a covert allusion

to the recent effort at jobbing consolidation, read the following poem:

Who killed Cock Robin ?
"I," said E. C. Simmons,
"I knocked those persimmons,
"I busted that trust."

Who tolled the bell ?
"I," said John Bindley,
"If you'll all take it kindly,
"I tolled the bell."

Who'll dig the grave ?
"I," said Sam Bigelow,
"For I can dig low,
"I'll dig the grave."

Who'll preach the sermon ?
"I," said Mr. Supplee,
"If they don't interrupt me,
"I'll deliver the funeral discourse at the annual meeting of the Southern Hardware Jobbers' Association, at Atlantic City, in June, 1902."

The interest in the addresses was such that notwithstanding the lateness of the hour the entire company remained attentive listeners to the close.

### Resolutions.

The following resolutions of thanks were reported by a special committee, consisting of Ed. S. Hughes, H. W. Cortes and J. Norman Wills, and adopted enthusiastically:

Your Committee on Resolutions beg leave to report as follows:

*Resolved*, That the Southern Hardware Jobbers' Association, after a most pleasant meeting at Atlantic City, desires to express its thanks to the many who have contributed to the success of the convention.

*Resolved*, We tender to the president, F. A. Heitmann, to the Executive Committee and the other officers of the association our sincere thanks for their untiring efforts in behalf of the interests of the association, and feel that their faithful services have contributed largely to the success of this convention.

We tender to our hosts, Josiah White & Sons, our thanks for their uniform courtesy and satisfactory service during our stay at this hotel.

We acknowledge our obligations to Jos. Hottel for his kindly interest in arranging for the entertainment of the convention.

It again gives us pleasure to have with us T. James Fernley, secretary-treasurer of the National Hardware Association, and also W. W. Supplee, a firm friend of the same organization. Their words of counsel have been of great value and greatly appreciated.

We wish to acknowledge the courtesy of the city tendered to us by the Mayor, Hon. Franklin P. Stoy, and also to thank the Rev. John W. Williams for his presence and service in our first meeting.

We note with much pleasure the attendance of such a large number of the wives, daughters and sweethearts of our members. Your committee found it difficult to rise to the occasion and express appreciation of their pleasure in adequate terms, but request each member to come to the rescue and join fully with your committee in assuring them of our pleasure in having them with us and our desire that they may continue to so honor us on all such occasions in future.

To the faithful Reception Committee and its most efficient chairman, Irby Bennett, and to the manufacturers whom they represent, our most heartfelt thanks are due, and our most grateful acknowledgments are tentered. Every feature of the entertainment has been enjoyed, and they have evidenced their unqualified devotion to our pleasure.

We are pleased to have with us the representatives of the Hardware trade papers. The full and interesting reports which they always give of our convention are an important feature in promoting the efficiency of the association, and we appreciate their interest and friendship.

It has given us especial pleasure to note the presence of so many of the leading Hardware manufacturers and their representatives. We are gratified to know that since our last meeting they have borne testimony to the value of trade associations by effecting an organization among themselves, and since they have so frequently given us evidence of their friendship we may hope for continued good will and co-operation and increased members on account of their organization. We are glad to know they have decided, as an organization, to meet with us each year.

## CONVENTION NOTES.

Col. B. F. Eshleman, who was elected to the office of first vice-president of the association, from his attractive personality and position in the trade was one of the most prominent merchants in attendance at the convention. He was enthusiastic in his advocacy of New Orleans as the place of meeting of the National Hardware Association in November next, and anticipates that the gathering there will be one of especial interest.

---

At one of the largely attended joint meetings of the jobbers and manufacturers Hobart Weed of Buffalo came in while the business was in progress and was greeted with a spontaneous and hearty round of applause. At the call of the president, Mr. Weed addressed the convention briefly and gracefully, expressing his appreciation of their cordial greeting, and then, as if shrinking from further attention, made suddenly and abruptly for the door, taking his departure amid laughter and applause. The episode was a striking illustration alike of Mr. Weed's popularity and the cordial feeling which pervaded the gathering.

COL. B. F. ESHLEMAN.

---

A unique and especially attractive souvenir was given by Wallace L. Pond of the Nicholson File Company. It was in the form of a ping-pong bat, which was ingeniously made the receptacle for candy. Attached to it was a miniature ball, the whole being inclosed in a neat box.

---

The convention did not determine the place of meeting next year, but as usual left this to the Executive Committee.

---

There was an unusual number of ladies in attendance, whose presence contributed much to the social success and pleasure of the gathering. They were cordial in expressions of appreciation of the courtesies extended to them and the munificent entertainment furnished.

---

## F. L. CLARK'S ADDRESS.

F. L. Clark of the Alabama Tube & Iron Company made the following response on behalf of the manufacturers to the address of welcome extended by C. E. Speer of the Speer Hardware Company, at the opening session on Tuesday morning:

When I received notice from the secretary of this association that I had been selected to make this response upon behalf of the manufacturers I endeavored to find some reason for the action of your Executive Commit-

tee, but could conceive of but one that seemed to cover the case. Surely the choice could not have been suggested upon the ground of oratorical ability, as I see before me many silver tongued among the manufacturers. Prominence in the trade could not have been the dominating influence, as we have "captains of industdustry" of world-wide reputation; nor does a superior knowledge of the manufacturing industry offer any solution, as we have experts in every department of industrial life. I therefore believe, Mr. President, that it was the desire of your committee to present to this convention thus early in its proceedings a regenerate, as an example to other Northern men, and I imagine at this stage of their session some member chimed in with that old familiar hymn, "While the Lamp Holds Out to Burn the Vilest Sinner May Return."

As this is primarily a meeting of Southern men it may not seem inappropriate if I should speak of the Southland, as up to a year ago I was included in the ranks of Northern manufacturers. So by your leave, Mr. President, I will take as my subject, "The South, Her Climate, Her Resources, Her People."

### SOUTHERN CLIMATE.

Few Northern people have any conception of the climate in the Southern States. Many of the wealthy or leisure classes seek the resorts of Florida or the shores of the Gulf of Mexico as a winter retreat, but they would consider it suicidal to remain south of Mason and Dixon's line after May 1, while the masses of Northern people believe the South to be the home of malaria, typhoid fever, yellow fever and in fact every ill to which human flesh is heir. They also think that during the summer months the thermometer toys with the boiling point, and that the Southern people have no need of fuel, as they cook what little food they get by the direct rays of the sun. A year's experience in Alabama proves to me that these views are entirely erroneous. The summers in the South are somewhat longer than in the North, but the pleasanter weather of the winter more than compensates for this. The heated term is not so severe, owing to the absence of humidity in the atmosphere, a statement borne out from the fact that sunstrokes are unheard of in the South. I am speaking especially of the climate of Alabama. If any of the gentlemen here come from sections of the South where these statements are not true, will they kindly keep the fact to themselves, but form the determination here and now to move to Alabama at once.

### HOSPITALITY OF THE PEOPLE.

It is customary among orators, Mr. President, to reserve for the close one's best subject, but as I have not appeared before the public so frequently as to have formed settled habits in this direction, and as I fear your gavel will fall ere I have completed my remarks on the resources of the South, I would take this opportunity of speaking about "her people." The hospitality of the Southern people is proverbial, but I do not find their virtues cease at this point. On the contrary I have proven them warm hearted, generous and true. They are intensely patriotic. At the time the news was flashed over the country that President McKinley had been assassinated I was living in the State of Alabama. It was a surprise to me to find the people of that State quite as much shocked as Northern people could have been. While there seems to be a trace of a gulf between the Northern and Southern people, occasioned by the Civil War, I wish to say to you Northern men, if you will but approach that imaginary line, extending a fraternal hand, it will be grasped by a people of the same blood, the same religion and the same love of country as yourselves.

### MINERAL WEALTH.

I will not trespass upon your time, Mr. President, nor exhaust your patience by giving statistics bearing upon the resources of the South, as they are too well known to require repetition here. The agricultural products of the Southland bear an important part in the commerce of the country, as the staple agricultural product, cotton, represents an annual value equal to almost half the capital stock of the great United States Steel Corporation. The turpentine and lumber interests extending from North Carolina to Florida employ a vast army of men with a large annual output.

It is the mineral resources, however, to which I wish to direct special attention. The mineral wealth of Tennessee, Alabama and Georgia exceeds the fondest dreams of avarice, but the wealth can only be made available by being developed to the highest degree. In the Birmingham district of Alabama the three important elements entering into the production of pig iron—viz., coal, iron ore and limestone—are found side by side, a condition that exists in no other part of the world. Our friends in that district claim that pig iron has been made at less than $5 per ton, and the statement seems to be borne out by facts. True prosperity cannot come to the South simply from the manufacture of pig iron. Instead of this metal finding a market in the North and there being manufactured into the finished forms and returned to the South, the Southern States should secure the benefit arising from its manufacture into Rails, Track Supplies, Nuts and Bolts, Hinges, Chain and the various Hardware articles so familiar to the gentlemen of this association. To accomplish these desired results it will be necessary to make labor as efficient in the South as it is in the North, so that a workman can produce as much in one section as in the other in a given time. This is not true at present, and it should be the aim of every one having the interests of the South at heart to impress upon the wage earner the necessity of giving his best efforts at all times.

IRBY BENNETT, Chairman of Reception Committee.

### ENCOURAGING SOUTHERN MANUFACTURES.

Years ago it was claimed by the Northern manufacturers that a duty should be levied upon imports, so that manufacturers in this country could successfully compete with those in Europe. The Republican party established such tariff, and instead of to-day having infant industries, we have giants. Unfortunately for the South her industrial development did not progress at the same time, and as a result she to-day stands in need of protection against the great consolidations of the North. It lies in the power of the members of this association to afford such protection to a considerable degree by patronizing home producers. Your railroads should also accord the full measure of protection to the infant industries of the South. In deciding upon rates of freight the question of the railroad manager should not be, How much will this traffic stand? but rather, How low can we carry this freight in justice to our stockholders and still encourage the development of Southern manufactures?

With the development of the industrial condition of the South along the lines indicated, by the manufacturer of these various finished articles, we will soon be rubbing elbows with our Northern neighbors in the world's trade. This means that the South must be interested in a shipping bill that will give us vessels from Southern

ports to every port on the globe and involving the building of the Nicaragua Canal, which will bring the markets of Asia and of the west coast of South America close to our doors. Every Southern man who wishes to assist in that industrial development of which he has so long talked should sustain Alabama's able Senator, Mr. Morgan, in securing needed legislation for the ship canal by urging upon his Senators and Representatives hearty co-operation.

The development of the Pittsburgh district during the past few years has been so rapid as to be almost beyond comprehension and has been at such a rate as to make Pittsburgh perhaps the wealthiest city in the world per capita. When you consider that she is forced to bring her ore from the Lake Superior region, her coking coal from the Connellsville district, and her limestone from a distance, it is wonderful that she has made such rapid strides. With the prestige of Pittsburgh, with the same energy and capacity of her people, with the technical knowledge in the manufacture of iron and


H. H. BEERS, Sergeant-at-Arms.

steel, what could not the Birmingham district do, when you consider that all these elements are found at her very doors.

## THE MANUFACTURERS' AGENT AND THE JOBBER.

The following paper on this subject was read by Arthur S. Jones of Memphis, Tenn.:

It is with great pleasure that I respond to your call to address you, and before entering upon my subject I wish to thank you, Mr. President and gentlemen of this association, for the courtesy and compliment paid me.

When it was made known to me by your worthy secretary that I was at liberty to select my subject, I chose that of the "Manufacturers' Agent and the Jobber," because it is one fraught with much interest to the manufacturer, the jobber and myself as an agent, and I shall attempt to treat the subject as it relates to both the manufacturer and the jobber.

Manufacturer is defined by Webster as "a person engaged in the business of working raw materials into wares for use."

Agent is defined by the same authority as "one intrusted with the business of another," as an attorney, a minister, a deputy, a factor. In law agent implies a kind of service in which the one serving has some discretion as to the manner of accomplishing the object. Hence the manufacturer's agent is a complex or composite type of representative, and may be either an itinerant salesman or local broker. Now that we have established the character and province of the agent, we must fix his relationship to the manufacturer and the jobber, and the first question we will ask ourselves,

IS HE A NECESSITY?

From the time of the first commercial transaction the traveling man has played an important part in the history of the world, and has been a potent factor in the distribution of manufactured products; first, as the representative of the manufacturer to the jobber, and then the jobber to the retailer, and in Great Britain to-day, under the name or title of factor, he represents the manufacturer direct to the retailer. This condition does not prevail to any extent in this country as yet, but, as our country becomes more densely populated, we may expect that it will. You will hardly deny that the manufacturers' agent is a necessity, because the trade conditions prevailing to-day would disprove the assertion. The experiences of the past 20 years have certainly established his value. Throughout this broad land there are distributed manufacturers of more or less importance, each one of whom is entitled to certain representation on the shelves of every jobber engaged in the sale of Hardware. In years gone by, when the product of the manufacturer bore to him a profit of from 50 to 75 per cent., and to the jobber of 100 or more per cent., the small manufacturer could well afford to employ his individual representative to visit the trade and pay him well for his services; but in the evolution that has taken place in the last decade conditions have so changed and profits have been so reduced that he can no longer afford the necessary outlay of traveling expenses and salary, notwithstanding the fact that the goods he manufactures and offers the trade possess the same merit and are of the same high standard. Naturally, the smaller manufacturer was the first to realize the value of the manufacturers' agent, but it was not long after that the larger and more pretentious ones perceived the necessity of curtailing their expenses and out of this very necessity, and others equally as important arose the manufacturers' agent. It is estimated that 65 per cent. of the Hardware and other kindred lines manufactured in America is sold through the individual efforts of the manufacturers' agent, or broker, as he is cometimes called, and, as a further proof of his potency, it is only necessary to assure you that a very considerable proportion of our wares sold in foreign countries are handled through his agency. If these statistics are not misguiding, his worth, then, to the manufacturer is conclusively shown, and it only remains to establish and fix his relation to the jobber.

Our authority defines a jobber as "one who buys of the manufacturer or importer and sells to the retailer."

The success, then, of the jobber is dependent on the amount of profit derived from the sale of his wares. If all manufacturers were in position to dictate a schedule of selling prices, as we find in some lines to-day, the jobber's profit would no longer be governed by his ratio of expenses, but fixed and dictated by a higher power. Many factories now being represented by manufacturers' agents, if they were compelled to pay the traveling expenses and salary of a representative of the same standing, would be forced to either advance prices, reduce the quality of their goods, or, in the extreme, abandon the field entirely. The ultimate result of this would be the pooling of interests. Competition would be strangled—higher prices would prevail—selling schedules be dictated, and the jobber's profit reduced. The manufacturers' agent's success lies in his ability to handle his various accounts and do justice to each.

The successful agent is specially endowed with a knowledge and gift, which not only applies to his salesmanship, but that of his ability to impress those with whom he comes in contact favorably.

In this he is of an advantage to the manufacturer and a convenience to the jobber.

### Members of the Association in Attendance at the Convention.

J. C. SPROULL, Anniston Hardware Co., Anniston, Ala.
W. A. CHENOWETH, Mayberry Hardware Co., Birmingham, Ala.
J. D. MOORE, Moore & Handley Hardware Co., Birmingham, Ala.
G. W. BARNETT, G. W. Barnett & Son, Montgomery, Ala.
WM. TEAGUE, Teague & Sons, Montgomery, Ala.
M. P. JEMISON, Allen & Jemison Co., Tuscaloosa, Ala.
BUCK WILLIAMS, Atkinson-Williams Hardware Co., Ft. Smith, Ark.
BENJAMIN ATKINSON, JR., Atkinson-Williams Hardware Co., Ft. Smith, Ark.
C. E. SPEER, Speer Hardware Co., Ft. Smith, Ark.
F. B. DUNLOP, Speer Hardware Co., Ft. Smith, Ark.
J. R. FONES, Fones Bros. Hardware Co., Little Rock, Ark.
JAS. J. MANDELBAUM, Fones Bros. Hardware Co., Little Rock, Ark.

H. C. Fox, Fox Bros., Pine Bluff, Ark.
Frank P. May, F. P. May & Co., Washington, D. C.
Frank S. Gray, S. B. Hubbard Co., Jacksonville, Fla.
I. S. Craft, Knight & Wall, Tampa, Fla.
W. B. Jackson, Athens Hardware Co., Athens, Ga.
J. H. Fleming, T. Fleming & Sons, Athens, Ga.
E. W. Deveney, Deveney, Hood & Co., Augusta, Ga.
A. H. Deveney, Deveney, Hood & Co., Augusta, Ga.
H. L. Anderson, Anderson Hardware Co., Atlanta, Ga.
T. W. Gathright, E. C. Atkins & Co., Atlanta, Ga.
Wm. Crumley, Beck & Gregg Hardware Co., Atlanta, Ga.
Geo. E. King, King Hardware Co., Atlanta, Ga.
H. M. Wortham, Dunlap Hardware Co., Macon, Ga.
J. M. Berry, Rome Hardware Co., Rome, Ga.
G. B. Baldwin, A. Baldwin & Co., New Orleans, La.
Jas. D. Gee, Turner Hardware Co., Muskogee, I. T.
A. Baldwin, Jr., A. Baldwin & Co., New Orleans, La.
Col. B. F. Eshleman, Stauffer, Eshleman & Co., New Orleans, La.
J. S. Carson, Charlotte Hardware Co., Charlotte, N. C.
Luke Thompson, J. H. Weddington & Co., Charlotte, N. C.
Chas. H. Ireland, Odell Hardware Co., Greensboro, N. C.
J. Norman Wills, Odell Hardware Co., Greensboro, N. C.
H. W. Powers, Mitchell-Powers Hardware Co., Bristol, Tenn.
S. B. Luttrell, S. B. Luttrell & Co., Knoxville, Tenn.
W. A. Gladding, E. C. Atkins & Co., Memphis, Tenn.
Jos. Orgill, Orgill Bros. & Co., Memphis, Tenn.
H. R. Miller, Thomas, Barnes & Miller, Memphis, Tenn.
Ed. S. Hughes, Ed. S. Hughes & Co., Abilene, Texas.
Jas. Moroney, Moroney Hardware Co., Dallas, Texas.
F. A. Heitmann, F. W. Heitmann & Co., Houston, Texas.
H. W. Cortes, Bering-Cortes Hardware Co., Houston, Texas
R. F. Bell, R. E. Bell Hardware Co., Weatherford, Texas.
Spencer James, Piedmont Hardware Co., Danville, Va.
O. B. Barker, Barker-Jennings Hardware Co., Lynchburg, Va.
Paul R. Howard, Paul R. Howard Hardware Co., Norfolk, Va.
Robert T. Meade, Charles Leonard, Petersburg, Va.
Beach Chenoweth, Mayberry Hardware Co., Birmingham, Ala.
John Donnan, W. S. Donnan & Co., Richmond, Va.
C. B. Carter, secretary-treasurer Southern Hardware Jobbers' Association, Knoxville, Tenn.

### Manufacturers and Other Visitors.

W. S. Tragle, Tragle Mfg. Co., Reading, Pa.
E. H. Britain, Menard Mfg. Co., New Orleans, La.
John C. Schmidt, Standard Chain Co., York, Pa.
Robert Garland, Standard Chain Co., Pittsburgh, Pa.
J. E. Pumphrey, Standard Chain Co., Pittsburgh, Pa.
W. W. Crandall, W. W. Crandall & Co., Nashville, Tenn.
H. F. Reese, Fairbanks Co., Baltimore, Md.
E. H. Scholar, Chattanooga Implement & Mfg. Co., Chattanooga, Tenn.
Charles H. Wier, Wier & Wilson, Baltimore, Md.
Frank Querbacker, O. K. Stove & Range Co., Louisville, Ky.
W. P. Smith, Mead & Smith, New York.
O. C. Mead, Mead & Smith, New York.
D. P. Hale, manufacturers' agent, Sandersville, Ga.
C. M. Fouche, Crucible Steel Co. of America, Knoxville, Tenn
Irby Bennett, Winchester Repeating Arms Co., Memphis, Tenn
J. Hildreth, Jr., Winchester Repeating Arms Co., New York.
H. Wise, the *Tradesman*, Chattanooga, Tenn.
H. A. Curtiss, Meriden Cutlery Co., Meriden, Conn.
F. S. Kretsinger, the Iowa Farming Tool Co., Ft. Madison, Iowa.
S. G. Gilfillan, Belfont Iron Works Co., Ironton, Ohio.
John R. Gilfillan, Belfont Iron Works Co., Ironton, Ohio.
C. W. Plumb, Eagle Lock Co., New York.
T. B. Coles, American Steel & Wire Co., New York.
T. H. Taylor, American Steel & Wire Co., New York.
E. R. Johnson, Comstock-Castle Stove Co., Quincy, Ill.
Paul E. Heller, Heller Brothers Company, Newark, N. J.
E. G. Heller, Heller Brothers Company, Newark, N. J.
J. E. Gaitley, Troy Nickel Works, Albany, N. Y.
S. H. Jacobs, Troy Nickel Works, Albany, N. Y.
John Hoen, Henry Keidel & Co., Baltimore, Md.
Eli Attwood, Lebanon Chain Works, Lebanon, Pa.
Frank A. Moeschl, Newport Rolling Mill Co., Newport, Ky.
Julius C. Birge, St. Louis Shovel Co., St. Louis, Mo.
W. W. Supplee, Supplee Hardware Co., Philadelphia, Pa.
James H. Kennedy, *Hardware Dealers' Magazine*, New York.
R. S. Waddell, E. I. DuPont de Nemours & Co., Cincinnati, Ohio.
Edward T. Jackson, Miller Lock Co., Philadelphia, Pa.
Geo. Reuter, Jr., American Wringer Co., New York.
Daniel Stern, *American Artisan*, Chicago, Ill.
Fayette R. Plumb, Fayette R. Plumb, Philadelphia, Pa.
W. R. Howell, Fayette R. Plumb, Philadelphia, Pa.
J. J. Teeple, Fayette R. Plumb, Philadelphia, Pa.
L. C. Frazer, Fayette R. Plumb, Philadelphia, Pa.
E. B. Pike, Pike Mfg. Co., Pike Station, N. H.
E. Bertram Pike, Pike Mfg. Co., Pike Station, N. H.
E. Warren Smith, Pike Mfg. Co., Pike Station, N. H.
W. L. Radford, Atlantic Coast Line, New York.
Lewis W. New, E. K. Tryon, Jr., & Co., Philadelphia, Pa.
Chas. Z. Tryon, E. K. Tryon, Jr., & Co., Philadelphia, Pa.
J. S. French, Peters Cartridge Co., Cincinnati, Ohio.
J. H. McKibben,, Peters Cartridge Co., Cincinnati, Ohio.
T. H. Keller, Peters Cartridge Co., New York.
H. H. Willett, Allerton-Clarke Co., New York.
Harry D. Harvey, National Supply Co., Baltimore, Md.
Samuel H. Taylor, Merchant & Co., Philadelphia, Pa.
H. H. Beers, Beers & Mitchell, Richmond, Va.
Geo. H. Harper, Clendenin Bros., Baltimore, Md.
John J. Alvord, the Atlas Shear Co., Bridgeport, Conn.
George P. Hart, Stanley Works, New Britain, Conn.
A. E. Duncan, Stanley Works, New Britain, Conn.
L. H. Pease, Stanley Works, New Britain, Conn.
C. H. Naylor, Stanley Works, New Britain, Conn.
B. A. Hawley, Russell & Erwin Mfg. Co., New York.
S. B. Bispham, Russell & Erwin Mfg. Co., New York.
W. P. Hudson, Russell & Erwin Mfg. Co., New York.
Edward Meyer, Russell & Erwin Mfg. Co., New York.
A. R. Sisson, Russell & Erwin Mfg. Co., New York.
A. D. Rogers, Whitman & Barnes Mfg. Co., Cincinnati, Ohio.
Louis G. Beers, New Jersey Wire Cloth Co., Trenton, N. J.
H. C. Whitehead, Whitehead Bros. Rubber Co., Trenton, N. J.
Alfred Whitehead, Whitehead Bros. Rubber Co., Trenton, N. J.
H. W. Caldwell, Cleveland Stone Co., Cleveland, Ohio.
Charles M. Jarvis, P. & F. Corbin, New Britain, Conn.
Chas. H. Parsons, P. & F. Corbin, New Britain, Conn.
Geo. L. Haven, P. & F. Corbin, New Britain, Conn.
J. W. Ryan, P. & F. Corbin, New Britain, Conn.
T. James Fernley, secretary-treasurer National Hardware Association, Philadelphia, Pa.
W. C. Reitz, Pittsburgh Steel Co., Pittsburgh, Pa.
Geo. M. Landers, Landers, Frary & Clark, New Britain, Conn.
Fred. M. Huggins, Landers, Frary & Clark, New Britain, Conn.
George W. Corbin, Corbin Cabinet Lock Co., New Britain, Conn.
George L. Corbin, Corbin Cabinet Lock Co., New Britain, Conn.
J. L. Richards, Corbin Cabinet Lock Co., New Britain, Conn.
Wm. C. Biddle, Biddle Purchasing Co., New York.
F. D. Mitchell, secretary-treasurer American Hardware Manufacturers' Association, Pittsburgh, Pa.
Henry B. Lupton, Oliver Iron & Steel Co., Pittsburgh, Pa.
F. H. Oakman, Lamson & Goodnow Mfg. Co., Shelburne Falls, Mass.
J. T. Quarles, Lamson & Goodnow Mfg. Co., Shelburne Falls, Mass.
A. H. Griffin, J. Stevens Arms & Tool Co., Chicopee Falls, Mass.
F. E. Muzzy, J. Stevens Arms & Tool Co., Chicopee Falls, Mass.
W. R. Walkley, Peck, Stow & Wilcox Co., New York.
T. H. Gossett, Peck, Stow & Wilcox Co., New York.
E. E. Paine, B. F. Avery & Sons, Louisville, Ky.
P. B. Noyes, Oneida Community, Niagara Falls, N. Y.
S. R. Leonard, Oneida Community, Niagara Falls, N. Y.
A. E. Kinsley, Oneida Community, Niagara Falls, N. Y.
F. S. Seeley, Wiebusch & Hilger, New York.
Fred. S. Merrick, Standard Horse Nail Co., New Brighton, Pa.
Paul D. Milholland, American Iron & Steel Mfg. Co., Reading, Pa.
Thomas E. Oliver, Oliver Bros., New York.
Landon P. Smith, Smith & Hemenway Co., New York.
A. W. Stanley, Stanley Rule & Level Co., New Britain, Conn.
R. N. Peck, Stanley Rule & Level Co., New Britain, Conn.
J. T. Powell, Stanley Rule & Level Co., New Britain, Conn.
Alfred W. Barnett, G. & H. Barnett Co., Philadelphia, Pa.
Tom Almgill, G. & H. Barnett Co., Philadelphia, Pa.
Joseph M. Hottel, G. & H. Barnett Co., Philadelphia, Pa.
John Clerici, Tubular Rivet & Stud Co., Boston, Mass.
George L. Knight, Tubular Rivet & Stud Co., Boston, Mass.
W. C. Bray, Tubular Rivet & Stud Co., Boston, Mass.
J. P. McKinney, McKinney Mfg. Co., Allegheny, Pa.
C. M. King, McKinney Mfg. Co., Allegheny, Pa.
Thomas Ellis, Iver Johnson's Arms & Cycle Works, Fitchburg, Mass.
J. Lovell Johnson, Iver Johnson's Arms & Cycle Works, Fitchburg, Mass.
W. M. Pratt, Goodell-Pratt Co., Greenfield, Mass.
A. Barnett, T. F. A., Old Dominion Steamship Co., New York.
R. K. Carter, R. K. Carter & Co., New York.
L. D. Vogel, Charter Oak Stove & Range Co., St. Louis, Mo.
W. C. Kelly, Kelly Axe Mfg. Co., Alexandria, Ind.
J. P. Kelly, Kelly Axe Mfg. Co., Alexandria, Ind.
A. Eugene Bolles, *Hardware*, New York.
Archibald Paull Mitchell, *Hardware*, New York.
George L. Karth, *Hardware*, New York.
Frank H. Snook, Dana & Co., Cincinnati, Ohio.
Charles R. Wilcox, National Supply Co., Baltimore, Md.
Daniel K. Stucki, White Mountain Freezer Co., Buffalo, N. Y.
Frank Guildener, Sargent & Co., Baltimore, Md.
John Sargent, Sargent & Co., New York.
H. P. Chenoweth, Sargent & Co., New York.
W. W. Drake, Sargent & Co., New York.
G. F. Wiepert, Sargent & Co., New York.
F. L. Wilcox, Peck, Stow & Wilcox Co., New York.
Edward H. Brooks, American Tin Plate Co., New York.
Hugh McCaffrey, McCaffrey File Co., Philadelphia, Pa.
Charles M. Biddle, Biddle Hardware Co., Philadelphia, Pa.
Robert Biddle, Biddle Hardware Co., Philadelphia, Pa.
William Taylor, American Steel & Wire Co., Louisville, Ky.
Newton Kelsay, Newton Kelsay, Evansville, Ind.
Dr. Clarence Kelsay, Newton Kelsay, Evansville, Ind.
Roy Kelsay, Newton Kelsay, Evansville, Ind.
J. H. Mann, James H. Mann, Lewistown, Pa.
C. F. Carrier, Cronk & Carrier Mfg. Co., Elmira, N. Y.
J. A. Holmes, John Russell Cutlery Co., Turner's Falls, Mass.
R. P. Boyd, John H. Graham & Co., New York.
Chas. P. King, American Iron & Steel Mfg. Co., Atlanta, Ga.
Joseph J. McCaffrey, McCaffrey File Co., Philadelphia, Pa.
F. Lohoff, Evansville Tool Works, Evansville, Ind.
A. J. Klein, Evansville Tool Works, Evansville, Ind.
J. E. Kelley, Simonds Mfg. Co., Fitchburg, Mass.
J. B. Curtis, Simonds Mfg. Co., Fitchburg, Mass.

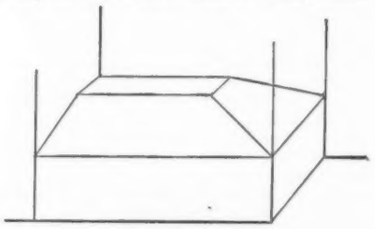
GUY MITCHELL, Beers & Mitchell, Atlanta, Ga.
R. D. CARVER, Alabama Steel & Wire Co., Birmingham, Ala.
F. H. FORMAN, American Steel & Wire Co., Chicago, Ill.
T. W. GATHRIGHT, E. C. Atkins & Co., Atlanta, Ga.
JOSEPH H. GRUBB, Hussey, Binns & Co., Pittsburgh, Pa.
ARTHUR S. JONES, manufacturers' agent, Memphis, Tenn.
FELIX B. LIPPMAN, Adolph Kastor & Bro., New York.
A. C. LANGSTON, Jenkins Bros., New York.
W. J. ORR, Old Dominion Iron & Nail Works Co., Richmond, Va.
JOHN H. SANDERS, Union Metallic Cartridge Co., Atlanta, Ga.
F. C. WHEELER, Hermann Boker & Co., New York.
GEORGE P. WIER, Wier Bros., Baltimore, Md.
W. H. MATTHAI, National Enameling & Stamping Co., Baltimore, Md.
F. M. CAMPBELL, Jones & Laughlins, Limited, Pittsburgh, Pa.
N. A. GLADDING, E. C. Atkins & Co., Indianapolis, Ind.
A. H. POTTER, E. C. Atkins & Co., Norfolk, Va.
B. M. GLADDING, E. C. Atkins & Co., Memphis, Tenn.
J. H. FAXON, Grafton Stone Co., Elyria, Ohio.
F. S. MILLER, Grafton Stone Co., Elyria, Ohio.
G. W. BROWN, Southern Plow Co., Columbus, Ga.
M. HIRSCH, American Cutlery Co., Chicago, Ill.
H. HIRSCH, American Cutlery Co., Chicago, Ill.
J. E. HARBSTER, Reading Hardware Co., Reading, Pa.
F. L. STELLWAGEN, Reading Hardware Co., Reading, Pa.
J. C. MCDONALD, Reading Hardware Company, Reading, Pa.
T. E. HENDRICKSON, Reading Hardware Co., Reading, Pa.
WALLACE L. POND, Nicholson File Co., Providence, R. I.
R. C. BRINKLEY, JR., Nicholson File Co., Providence, R. I.
J. T. RADER, International Cutlery Co., Fremont, Ohio.
GEORGE E. HOLTON, Bryden Horse Shoe Co., Catasauqua, Pa.
HARRY MAYER, Mayer & Co., Philadelphia, Pa.
C. L. HARDWICK, Hardwick Stove Co., Cleveland, Tenn.
F. HERBERT SMITH, Nicholson File Co., Providence, R. I.
ALBERT F. CORBIN, Corbin Cabinet Lock Co., New Britain, Conn.
W. M. COSGRAVE, Southern Plow Co., Columbus, Ga.
R. MANN, JR., Mann Edge Tool Co., Lewistown, Pa.
L. M. KELSEY, Eberhard Mfg. Co., Cleveland, Ohio.
J. D. BETHEL, Marlin Fire Arms Co., New Haven, Conn.
FRANK E. STODDARD, Ammunition Manufacturers' Association, New York.
R. R. WILLIAMS, *The Iron Age*, New York.
THOMAS HOBSON, *The Iron Age*, Philadelphia.
A. A. MILLER, *The Iron Age*, Philadelphia.
ED. INGALLS, Atha Tool Co., Newark, N. J.
FRANK GUILDENER, JR., Baltimore, Md.
W. A. CORRY, J. C. McCarty & Co., New York.
WREATHER GATHRIGHT, E. C. Atkins & Co., Atlanta, Ga.
W. B. JACKSON, Athens Hardware Co., Athens, Ga.
HAROLD LEROY HARVEY, National Supply Co., Baltimore, Md.
T. J. JEFFERSON, T. J. Jefferson, Petersburg, Va.
F. M. IRWIN, Griffin Hardware Co., Rome, Ga.
A. R. SULLIVAN, Towers & Sullivan Mfg. Co., Rome, Ga.
H. A. DEAN, Towers & Sullivan Mfg. Co., Rome, Ga.
O. P. SCHRIVER, O. P. Schriver & Co., Cincinnati, Ohio.
D. M. FORKER, Republic Iron & Steel Co., Birmingham, Ala.
GEO. A. BAIRD, Republic Iron & Steel Co., Chicago, Ill.
S. LITTLE, Goodell Co., Antrim, N. H.
D. H. GOODELL, Goodell Co., Antrim, N. H.
KENNETH CLARK, Birmingham, Ala.
B. J. BONNER, American Steel Hoop Co., Philadelphia, Pa.
J. W. BRAINARD, American Steel Hoop Co., Pittsburgh, Pa.
T. E. BIDDSON, Pennsylvania Hardware Co., Baltimore, Md.
T. HENRY ASBURY, Enterprise Mfg. Co., Philadelphia, Pa.
C. B. LEE, Hopkins & Allen Co., Norwich, Conn.
GIFFORD V. LEWIS, Old Dominion Iron & Nail Works Co., Richmond, Va.
J. H. DRAKE, Southern Railway, Richmond, Va.
W. P. CHAMBERLAIN, Knoxville Iron Co., Knoxville, Tenn.
T. I. STEPHENSON, Knoxville Iron Co., Knoxville, Tenn.
E. F. COOPER, Henry Disston & Sons, Philadelphia, Pa.
F. E. SNOW, Wells Bros. Co., Greenfield, Mass.
P. J. LEAVENS, Wells Bros. Co., Greenfield, Mass.
R. C. WILDE, Meriden Cutlery Co., Meriden, Conn.
W. A. CRAWFORD, Griffin Mfg. Co., Erie, Pa.
C. W. SHACKLEFORD, Ross-Meehan Foundry Co., Chattanooga, Tenn.
E. H. TITCHENER, E. H. Titchener & Co., Binghamton, N. Y.
H. J. MCCUE, American Steel & Wire Co., New York.
SAMUEL DISSTON, Henry Disston & Sons, Philadelphia, Pa.
WM. RILEY, Wm. H. Cole & Sons, Baltimore, Md.
S. C. BUSH, New York City.
W. T. NORTON, Norton Tool Co., Cleveland, Ohio.
CLARK MATTHAI, National Enameling & Stamping Co., Baltimore, Md.
H. B. BLACK, H. B. Black & Co., Chester, Pa.
L. F. THURBER, White Mountain Freezer Co., Nashua, N. H.
A. B. TARBOX, Boston & Lockport Block Co., Boston, Mass.
J. VAN NEWKIRK, Russell & Erwin Mfg. Co., Philadelphia, Pa.
J. H. MOHNS, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
HENRY J. TURNER, U. S. Hame Co., Buffalo, N. Y.
ARTHUR B. CLARKE, Richmond, Va.
T. C. WATSON, U. S. Hame Co., Buffalo, N. Y.
B. A. WALKER, Lovell Mfg. Co., Erie, Pa.
S. MILNOR PRICE, Henry Walke Co., Norfolk, Va.
HOBART WEED, Weed & Co., Buffalo, N. Y.
HARRY MAYER, Mayer & Co., Philadelphia, Pa.
H. P. STONE, Warren Axe & Tool Co., Warren, Pa.
NORMAN P. COOLEY, Hart & Cooley Mfg. Co., New Britain, Conn.
E. S. JACKSON, Miller Lock Co., Philadelphia, Pa.
J. B. CURTIS, Simonds Mfg. Co., Fitchburg, Mass.
J. S. KNOWLSON, M. Klaas, New York.
J. R. LINN, M. Klaas, New York.
EDWARD H. KINNEY, Rochester Lamp Co., New York.
VICTOR H. POWER, *Manufacturers' Record*, Baltimore, Md.
H. G. HOLLIS, Lufkin Rule Co., New York.
L. C. GRISWOLD, Corbin Cabinet Lock Co., Philadelphia, Pa.
DAVID J. WEISIGER, Old Dominion Steamship Co., Richmond, Va.
MR. VINTON.
H. S. WILLETT, Atlanta, Ga.
J. PUMPHREY, Cleveland, Ohio.
GEO. E. HOLTON, Bryden Horse Shoe Company, Catasauqua, Pa.
C. A. EARLE, New York.
H. P. DAWES, New York.
ALBERT GRAHAM, Pittsburgh, Pa.
A. D. ROGERS, Atlanta, Ga.
E. E. PERRY, Hopkins & Allen Arms Co., Norwich, Conn.
N. WRIGHT, Connecticut Valley Mfg. Co., Centerbrook, Conn.

## A SEED WINDOW.

BY S. M. ROBINSON.

IF properly arranged, a Seed window always pays well with us. To make such a window we save the Seed lithographs each year as they come from the Seed houses. We thus collect enough to cover the entire back of our window, which is 8 x 12 feet. They make a most effective background. These arranged, we put a slanting false bottom in the window, so that the people can see the Seeds from across the street. Measuring in 3 feet from the front and side windows, and about 12 inches above the floor of the same, we lay boards on an inclined plane toward the front and side windows. The floor space left after making this two-sided inclined plane is boarded over on a level, so that there is a platform in the rear about 3 x 4 feet, as shown in the accompanying illustration.

We then take two rolls of 5-foot Poultry Netting and stand them on end each side of the front panes of glass, placing on top of these two rolls of 4-foot Net. We then



*Platform in Seed Window.*

cant in the tops of the 4-foot rolls, forming an arch with the same. This is fastened with a wire to a screw hook at the top of the window.

The side of the window is covered with white paper. We then place Shovels, Spades and Forks in a half circle against it. This makes a good show of Tools, which is necessary at this season of the year. We are now ready for the Seeds, for which we have procured about 100 wooden butter dishes, such as the grocers use to send out butter in. We fill these dishes with every kind of Seed that we keep, and place a card with the name of the Seed in each dish. The cards are of uniform size, and the names are written in a good plain hand. We then cover the bottom of the window with white paper, and place the dishes of Seed on the inclined planes.

We place one of our best looking One-Horse Plows on the platform in the rear of the window, with a farmer dressed up with blue shirt, overalls, long legged boots and straw hat in back of the Plow. We pile Seed Sowers, Corn Planters, Paris Green Shakers and small Garden Tools upon the platform around the Plow—and the window is done. With this display we capture the Seed trade of the town.

ROME MFG. COMPANY, Rome, N. Y., manufacturers of nickel plated and polished copper specialties, have established a European agency in charge of William Cruger Cushman, 19 Chapel street, London, E. C.

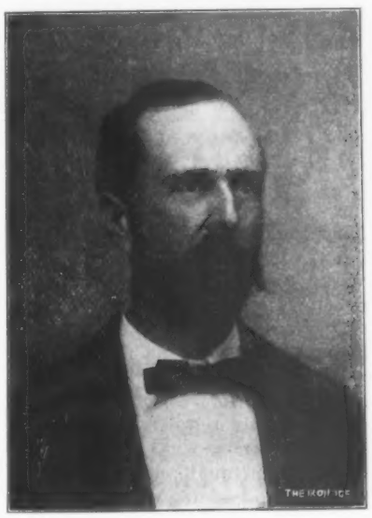
LAKE SHORE STEEL & WIRE COMPANY, Milesgrove, Pa., have their machinery all installed and their plant is now in full operation. They make a specialty of Hay Wire, Corn Ties and Wire Nails, and call attention to the quality of their product.

# Arkansas Retail Hardware Dealers' Association.

THE third annual meeting of the Arkansas Retail Hardware Dealers' Association was held in Little Rock on the 18th and 19th inst. Forty-six members were present. The meeting was called to order by President Pittman on Wednesday morning at 9 o'clock. The opening prayer was by Rev. Benjamin Cox, after which Mr. Pittman introduced Mayor Duley of Little Rock, who welcomed the delegates in the following address:

### Mayor Duley's Address.

In this day when all interests, of whatever nature, are organizing, having to deal only with the practical affairs as I do, it affords me pleasure to welcome the members of an association which has for its object the betterment of legitimate business interest. With the knowledge that organizations and combinations are being made daily for the sole purpose of reaping excessive profit from the labor of the toiling masses, by forcing out of competition the smaller merchants and gathering into the hands of the few what should be a legitimate profit to the independent dealer or manufacturer. I am convinced more and more that yours and similar organizations are the beginning of the end of what are generally called trusts and combines. We have had



JOHN M. PITTMAN, President.

many ideas advanced and laws advocated as to how these should be regulated, but up to date I have failed to note a single word as to how they could be obviated. I believe you represent a class of goods, the manufacturer of which is protected by laws, possibly more than all other classes. I refer to our patent right laws, which, with the copyright, have enabled 99 per cent. of what are known as trusts to be organized. They are thus enabled to fix the schedule of pay for the labor upon one hand and fix the market price of the product on the other, thus admitting of no competition.

There are but three classes of men in the commercial world, the laborer, merchant and manufacturer, of which the manufacturer by this system places the others at his mercy. This, I believe, could be remedied by our general government doing one of two things, purchasing outright all patents and allowing the free use of them, or compelling the patentee to fix his own royalty but granting to all the right to the use of it upon payment of the royalty. Under such a law the inventor would not be deprived of a just compensation for his genius, and those who believed a profit would accrue from the manufacture of any article would enter into competition and it would be placed upon the market for its actual worth as represented by labor and capital invested. This law has always appeared to me to operate in direct opposition to the very first principle of free government, which is to secure special privileges to none. Being a member of one of the most conservative labor organizations in existence to-day, and one which has never believed that strikes were the proper method to secure our rights, and believing that to a great extent you are at a disadvantage, and that right and justice will prevail, I expect to see the time when labor and commercial organizations will be working in harmony and remedying existing evils, while our commerce and industries are the wonder of the entire civilized world. Should this concert of action be consummated, with the possibilities of our country and its undeveloped resources, these interests would far exceed the calculations of the most enthusiastic optimist.

Gentlemen, when I appeared before you two years ago I advised you at that time of what I believed was needed legislation in the interest of our trade centers and the necessarily resultant good to our citizenship in general. While this was not secured, the most important measure, the amendment to the constitution allowing cities of the first class to issue bonds, was only defeated by four votes in the House. I found that the members of your association had lent no small part in securing this favorable vote. With the unanimous support of the other commercial organizations which have been organized since that time, pledged to assist in bringing about this needed legislation, I feel sure that before your next annual meeting you will have found that your influence has brought about good results and that another step in advance has been made that will result in good to all interests. While I do not expect to meet with you in an official capacity, I assure you that our people would be pleased to have your association hold your next annual meeting in this city. Wishing that yours and all organizations that are interested in the upbuilding of our commercial interest may continue to prosper and their influence grow stronger, I bid you welcome to our capital city.

### Vice-President Maxey's Response.

Vice-President Maxey responded to the address of welcome, and said in part:

I, like the majority of the membership of this body, come from the glorious common people—workmen who may not be ashamed of their calling. We cannot be called a convention of clean hands, for the average Hardware dealer needs about two more pairs of hands to keep one pair clean and smooth enough to vote in a convention like this without embarrassment on a show of hands. We have the proud honor of being classed laboring men as well as merchants. We obey the divine requirement, "By the sweat of the brow shalt thou eat bread."

The prosperous, up to date Hardware dealer must fill a double place. He must know the wants and the requirements of the progressive and nonprogressive farmer, of the mechanic, the machinist, and at the same time have the wisdom of a broker in keeping up with the fluctuations of the markets. While engaged in these diversities he must keep a weather eye out in the direction of unfair competition, in the shape of junk shops, agents, general dealers and shyster drummers who sell on the sly to consumers at wholesale prices.

Mr. President, we come here from all parts of the Commonwealth of Arkansas. We come from our places at the wheel of business. While we have axes to sell we have none to grind; knives to carve, but none to sever the bonds of union, which we feel necessary to our welfare. We have cultivators for our smiling fields of grain and let us use them in friendship to cultivate those ties of true fellowship, and not as harrows to harrow up strife.

Let us make opportunity of this glad welcome in

the City of Roses, to make our meeting felt in the capital and throughout the borders of our State.

It is a true saying that no one can sympathize with a mother like a mother, so may it be said of our trade, no one but a Hardware dealer can know what a Hardwareman needs, feels and experiences. There are many sharp points, keep edges and polished virtues easily tarnished; we have need to heed them all.

The president appointed the following committees:

AUDITING: J. F. Maxey, R. P. Graham, K. G. McRea.
RESOLUTIONS: H. H. Morgan, R. F. Roys, E. E. Mitchell.
QUESTION BOX: W. M. Harrell, Hamp Williams, Frank Gregg.

Adjournment was then taken until 2 p.m.

### The Presidents' Annual Address.

The president opened the afternoon session with his annual address, as follows:

I am really very sorry that we have not more of Arkansas represented than we have this afternoon. I assure you that I had prepared for a much larger audience than this one. But in the absence of numbers I consider that we make up all deficiencies in quality. I am sure that, while we might have more, we have the cream of the Arkansas Retail Hardware Dealers' Association with us. Of course, I was joking about having a very large address or anything to say that will interest you to any great extent. My remarks are really very short, and I will detain you for a short time only.

Delegates and friends of the Retail Hardware Dealers' Association, I am not quite sure that what I have to say should be dignified with the name of an address, as you have styled it on your programme. It is our purpose in meeting here to-day to view and discuss the work of the past year, and to plan for a better and more effective work in the coming year. We should be able to make of these annual meetings not only an occasion of studious devotion to work, but a season of relaxation from business cares, but I would not have you think that we will subordinate the business of this afternoon to having a good time. I have not had any data for the report of the work accomplished during the past year, neither have I information as to our present membership, but I am encouraged to believe that we are still making progress and are on rising ground. Our secretary will, no doubt, furnish you with all this information when he comes to make his detailed report. In this connection I wish to state that I find a feeling among some of the members of this association that the officers and committees of our association are not prompt and vigorous in taking action. From a casual standpoint I confess that there are some grounds for such a criticism. Our organization in the State is not as strong as it should be, or as it will be. Our association needs and will have a larger membership, and we are not going to rest satisfied until every respectable retail Hardware dealer in the State is a member. Our progress at all times must be on a fair and impartial basis. The position and prestige of our association is far in advance of the position occupied by us one year ago, and we surely have cause for great encouragement. We have only commenced serious work. Personal vigilance and personal labor is the purchase price that must be paid for fairness in our personal relations. We may be called upon to make a declaration and to stand by it. With this line of our work promptly followed there is no question of our power and our success. This explanation will, I trust, give faith and courage to those who are disposed to falter and to doubt.

RECOMMENDATIONS.

I now submit the views and recommendations that I think should have careful consideration. First, in reference to the secretary, I have no criticism of his work to make whatever, but rather feel sure that he has done everything that a man could do who has a business of his own to look after. I recommend that we elect a secretary who can give more of his time to association work, and that he be paid a salary commensurate with his work. That that secretary be instructed to issue a yearly manual, papers relating to the retail Hardware business and such other information as shall help to build up the retail Hardware trade of this State. I recommend that the annual date of meeting be changed from the third Wednesday in June to the second Wednesday in May. I recommend that every member of this association be requested to have printed or stamped on his stationery "Member Arkansas Retail Hardware Dealers' Association." I recommend that Article 5 of Section A be changed so as to make the Nominating Committee consist of one member of each Congressional district, to be elected by the membership in that district.

Gentlemen, this is my report, and I submit it to you. Now it has been the practice, I believe, to have these reports read in what is called executive session, and it might be that my address is subject to some criticism by our members. I assure you that there is nothing in it that I would not have our friends of the manufacturing and jobbing interest understand fully. I am sure that every retailer wants to be placed on the proper retail Hardware basis, and while we may have differences they should always be considered cautiously and carefully. I thank you for your attention, and submit you now my report.

The address of the president was referred to the Committee on Resolutions.

### Secretary-Treasurer's Report.

Secretary-Treasurer John A. Plummer of Marianna submitted his report, showing a membership of 52 and a cash balance of $60.50.

### What Effect Will a Combine of Large Hardware Companies Have on the Retailers?

J. B. Gregg of Little Rock read a paper on this subject, as follows:

I expect a good many of you wondered what I was going to do about that number on the programme, "What Effect Will a Combine of Large Hardware Companies Have on the Retailers?" This is a very big subject and I wish I could tell you just what effect these proposed combinations will have. You may be surprised that I was not asked to take this subject. I was simply notified that I was on the programme for this subject and there were no excuses taken. I will endeavor to give you my guess.

I believe the combine will eventually be formed. Without it the big jobber will be put out of business in a few years. It takes time to work changes in business methods, especially where so many are concerned. The combination was sprung on the public prematurely, and like any new thing that is not fully understood, the people were afraid of it. All radical changes in any walk of life are met with opposition. The press sounded the alarm, and instantly retailers and manufacturers were up in arms and saying what they would do. The combine made an unfortunate choice in some of its leaders. There happened to be some whom many were prejudiced against and men whom many thought were too smart. This selection of some of the leaders kept some of the powerful houses out of the combine, and without them the organization would not be strong enough to control the market. All these together have caused a temporary abandonment of the scheme.

But the movement will come to the front again, and when it does it will include many manufacturers. To learn the effect we must first learn the cause. Greed and fear. Greed, a strong desire to control more money by getting the jobbing business in such a shape that the small jobber and large retailer are at their mercy. Fear—they fear each other, but they fear the small jobber and large retailers more. There is not one large jobber who would not crowd all other jobbers out of the business. So they agree to combine against their enemy. When the time comes that the organization can be formed to show the factories that it is for their benefit, all will get into the band wagon.

There are four ways for the combine to satisfy its greed:

*First.* Advancing prices.

*Second.* Buying or producing cheaper.

*Third.* Enlarging or extending its business.

*Fourth.* Reducing the percentage of cost of doing business.

A jobber, being kept up by the retailer, will hardly advance prices beyond the danger line. The second

way would be a source of some profit, as some factories can be operated more powerfully than others. There is a great field for enlarging and extending business, principally with foreign countries, which can be done better by the combine. The fourth, saving in expense, will be the greatest source of profit saving, in catalogues, railroad fares, &c. Such a combine will help the legitimate retailer. The trust must look for the retailer to sell its goods. It will refuse to sell the department stores and catalogue houses, thereby getting the trade that belongs to the retail Hardware dealer. This will allow him to use his time in getting and holding trade, while the organization will help the retail dealers as a body.

The convention then adjourned until Thursday morning.

### The Most Important Things in Conducting a Hardware Business.

The session on Thursday morning was initiated by Hamp Williams, who read a paper on the above subject, as follows:

All things pertaining to the Hardware business are to be taken collectively in order to make it a success. Location, capital and ability are the essential points and are the foundation of all mercantile pursuits. More especially in this the case with the Hardware business.

Location is the first, for without a good location it is impossible to have a demand. Capital is to be considered, and, of course, is important, but is not so important as the first or last mentioned. A good location and ability taken collectively will induce capital to assist you.

CREATING DEMAND AND PUSHING GOODS.

Ability is the most essential of all, as there can be no hope of success without it. So upon it I mean to dwell, as I regard it paramount to all other points in conducting a Hardware business. To know when to buy and how much to buy is a hard problem, but my experience has taught me that the most successful way is to buy according to the demand. But many times you can increase the demand by an earnest push. Increase your demand by increasing your variety. That is more necessary than to increase your stock of goods already introduced. And as you increase in capital so should you increase in knowledge. Staples will sell themselves, but it takes a good merchant to introduce new goods successfully. If a man can take Sewing Machines alone and make money out of them, I certainly can make money on them as a side line. If there is not a Pump in my town I will undertake to make a demand by getting a few and pushing them vigorously.

Three years ago there was not a Self Binder Machine in my county, very few Mowers and but few Reapers. I accepted an agency (my competitor already had one) and we began to push them. Everybody said that we couldn't run Harvesting Machines in this country—too rough and too rocky. But we kept pushing, and now there are four Machines sold in our town, and altogether we will sell 200 Machines this year. We have done the same thing in Cultivators. We made a demand. We helped ourselves and we have benefited our people and our country. We have made it possible for our customers to make more, and they are therefore able to spend more. We have better farms and better farmers, and we are better merchants.

Three years ago not a Buggy in our town for sale. Now there are four firms handling Buggies and doing a nice business. We made a demand by keeping them in stock, and secured a trade that otherwise would have gone to distant cities. And this same will apply to many other lines of business. By creating the demand and pushing the goods we have benefited ourselves as merchants and helped our city and country.

HANDLING CUSTOMERS.

Add to your location capital, and to your capital ability, and success is a certainty. It takes ability to know how to sell goods, partly cultivated and party inherited, but mostly it is done by cultivation. You must meet people well or you can't win them. Never meet them with a deceitful air, but always with a glad hand and an open heart. Be frank and courteous always and under all circumstances. If you want to be successful see your customer first. Receive him kindly, place him in good hands and assure him that he will be treated right. See him last and get an expression from him as to how he has been treated. Invite him back again and be particularly careful that he goes away satisfied. And be careful again that you hold all your old customers, for there is the foundation of your business and upon it you can build. If you can't hold your old customers how can you expect to hold your new ones? You must remember, also, that your old customers will get "weak in the faith." If you never give them anything except the glad hand and the open heart they will consider it hardly enough. They sometimes expect a little something more, and a small gift occasionally is money well spent and usually appreciated. But don't stop at that.

GOOD GOODS.

Educate your trade to buy good goods. Do not handle goods to compete in price with catalogue houses. It is well enough to have a small assortment of cheap goods on hand, to show your trade the difference between a first-class article and a cheap one. Push good goods and stand by them. Educate your trade to know that when you recommend an article it means something. It is not necessary to guarantee your goods, but handle a line you know will give satisfaction. Four years ago I was selling a great quantity of cheap Tinware. A salesman induced me to put in a small stock of good quality Enameled Ware. I protested at first, telling him there was too much difference in price. For instance, a Tin Wash Basin that I sold for 5 cents, and made 1 cent profit, the same size in Enameled Ware sold for 25 cents, a profit of 9 cents. I ordered a very small assortment. Thirty days later the salesman returned. While he was in my store I had a call for a Wash Basin and I showed my customer the Enameled Ware, at the same time apologizing to him for showing it, and told him that it was high. Of course he agreed with me and took the Tin Basin. When he went away the salesman said: "Do you expect your trade to buy an article from you when you condemn it yourself? Why didn't you tell him the truth—it was not high. The Enameled Pan was better worth 25 cents than the Tin one 5, and a difference of not less than 8 cents to you." That opened my eyes and from that day I began to sell the best grade of Granite, since which time I have sold quantities of the ware, and to-day I can hardly sell cheap Tin at any price.

On a number of other lines I have had the same experience, increased my sales, benefited my customers, and have made a better percentage of profit. I am a strong believer in special brands. And it matters not whether your own or your jobber's, if you control the brand it is your own, and a comparison in quality is impossible, which enables you to get a fair profit.

CREDIT AND CASH SYSTEMS.

It requires ability to sell goods on credit successfully. To say "yes" when you should say "no," or *vice versa*, is the secret to success in the credit system, as a very little experience will soon teach you. If you find that you have not the ability to sell on credit, then try the cash system, which in my opinion requires more ability than the credit system. It is easier to sell goods on credit, and if you will exercise the proper precaution you can make a success. But locality and custom have a great deal to do with it, and in that you must be the judge. If you sell goods on credit always have a set time for collections, and give your trade to understand that you will expect payment to be made when due. I sell Builders' Hardware, Shelf Goods, &c., on 30 days in the city, but I do not sell any class of goods on 6 or 12 months' time, except Wagons, Buggies, Sewing Machines, Cultivators and such other items as I can hold a lien upon to secure me for purchase price. For instance: If you sell 30 or 60 day goods on open account to a farmer on such terms you must have a large surplus of money, or you cannot discount your bills. And if the party proves to be "no good," you have but little show to collect. But if he is owing for a Wagon, Machine or Cultivator you can take that from him, and

that exposes him in the neighborhood in which he lives, which thing he will not allow if he can possibly prevent it. But if it is on open account and he does not pay it, very few, if any, will know about it.

CLERKS.

It requires ability to select good honest clerks, and it requires more judgment to keep them good and honest after you employ them. No doubt in my mind but that many merchants are the cause of their men being dishonest and trifling—some by teaching them that they have no confidence in them. And it is certainly very discouraging to a clerk to know that his employer has no confidence in him. If you have no confidence in your clerks, how can you expect others to have; and unless your trade has confidence in you and in your clerks, which means the same thing, how do you expect to build up your business? Your clerks are a part of your business, and your success is largely dependent upon them. As you increase your stock of knowledge you must help to increase theirs, and as you increase your stock of

HAMP WILLIAMS.

merchandise you should help increase their finances. If you take no interest in your business, how can you expect your clerk to do so?

There are a great many other things that are necessary in successfully conducting a Hardware business. For instance, a well kept stock, clean and complete. And last, but not least, you must treat the people you buy from right; pay your bills promptly and never make a claim for shortage or hold goods subject to order unless you know positively that you are right. One claim of a shortage when proven that you are wrong will injure you more with your jobber than the worth of the article.

TRAVELING SALESMEN.

The drummers are the representatives of their houses, and unless the jobber or the factory had confidence in their honesty and ability they would not send them out. Therefore it is very necessary that you treat the drummer right, for upon him your success largely depends. He and his co-workers encircle the globe and they are on the "go" continually. They are writing and talking, and it is their business and right to be heard. They are your mouthpiece, and when they hear you they communicate it to their employers. If you are not courteous to them their houses hear of it. If you hold them unnecessarily waiting for your order, that is an injury to the house that is represented, and the blame will come back on you. I owe a great deal of my success to the traveling salesmen. They come into my store, they talk with my clerks, they enthuse them and put new life in them. It is just as necessary to have friends to buy of as it is to have friends to sell to.

A CHEERFUL DISPOSITION

has a great deal to do with your business, both in buying and in selling. On one occasion I had a customer to call. I met him at the door, shook hands with him, called him by name, invited him in, and asked about his home and the country in general. I could see that he was blue. He asked me how my business was. I said, very good; that everything looked bright to me—one more rain now and another in two weeks and still another three weeks later and our crops would be a certainty, and then what a great harvest we would have. He began to brighten up a little. I told a joke and he laughed. Then I asked him if I could sell him a Wagon. He said: "No, but I thought when I left home that I would buy my wife a new Stove. She certainly does need one, but I was just about out of the notion when I came in here. I had been in another store and they were talking about times being so hard, and that they did not see what was to become of the people if it did not rain right away, and if it did rain there would not be much made, as the crops were half cut already, and they looked for a war any how. And they told me about the big strike in Chicago, about Armour cornering the meat market, and several other things; and so I just about made up my mind to keep the money and not buy the Stove." I said: "Yes, that fellow over there is soured and sore on the world. He is not doing much business any way, and he thinks that everybody is going wrong." I told him that "Uncle Sam" had seen Mr. Armour, that the strike would amount to nothing and that everything was all O. K. He bought the Stove from me, went away happy, made his wife happy and she told her neighbors about her fine new Stove. It rained as predicted, and I sold ten or more Stoves in that neighborhood. That one sale was the cause of all the sales.

"No patience, no self denial, no character and no brain is required to set up in the grumbling business, but those who are moved by a genuine desire to do good have little time for murmuring or complaint."

"Hope unlocks the temple door,
Oh, heart, arise and see.
Weak fear an added bolt supplies
And doubting rusts the key."

### Freights and Railroad Commissions.

A discussion of this subject followed. T. B. Stewart spoke as follows:

I notice that they have Smooth Wire on hand at the regular rate. We find it under Implement rate, where Wagons, Cultivators, &c., are shipped. Take a Wagon, for instance, shipped from St. Louis. Often a man does not care to buy a straight car. I think it would be well for a committee to be appointed to take such matters up with the railroad commissions in the State, and also work in connection with certain jobbers, trying to get some goods on a more moderate rate than others. For instance, iron. I think there is a great deal of room for improvement along this line, and at the end of a year it amounts to a great deal of money. Relating to freight claims and damages there should be some help.

### Fakes and Fakirs, or Leg Pullers.

W. M. Graham of Clarendon read an interesting paper on this subject, in which he referred to this as one of the greatest evils of the business. Mr. Graham concluded as follows:

For the sake of harmony you are compelled to sacrifice the price of some article in dispute; that is where you get your leg pulled. There is a church being built out in some neighborhood and you donate a keg of Nails; Widow So-and-So had her house burned and you dig again; there is a new carpet being put down in some church in town; even the colored brother wants you to help pay the preacher out at Mount Zion; any calamity happens, and there is a break made for the merchant, and the general public that receives the benefit is never touched. I believe in being charitable, but I am free to say that we are getting our leg pulled. In conclusion, I believe that kickers and leg pullers are with us to stay; we can only study the nature of the animal and govern ourselves accordingly.

### Discussion.

R. F. Roys discussed Mr. Graham's paper as follows:

I have had very little time to prepare anything on this subject, and unfortunately I was too late to hear all of Mr. Graham's remarks on the subject. I have often wondered if a great many of us Hardwaremen could not

be classed as fakirs, but after thinking the matter over I have decided that we are not. Of course, when a new article is introduced and it proves a failure the Hardwareman is said to be a fakir right away, and he is blamed for it. Most of us have to contend with a class that is uneducated--that is, in a measure—and if at any time things are not just what they think they should be, and they have about four times the idea of its value, the man who sold it is considered a fakir. If a man means to make a success he must study every point of every new implement and everything that is necessary to satisfy trade. It is his duty to try to do something to meet the requirements of his trade. He has got to be an A1 judge of human nature. He has to make this almost his first study. He has got to class his kicker and find the remedy. He himself must be a first-class kicker in that case. As to the question that Mr. Graham sprung on us about the leg puller, the Hardwareman is a leg puller very often. He can use a little care, however, and it will do his business a certain amount of good. For instance, if they want to buy a new church, it is according to who brings in the subscription list that I give. If it is a man in my neighborhood, I lead him into conversation that will bring out his plans, learn how he is going to build that particular church, and it will finally end up that I am giving something out of appreciation for what these people are doing for me.

### Cash Register vs. Cash Drawer.

J. M. Harrell, who was down on the programme to read a paper on "Cash Register *vs.* Cash Drawer," was absent, and Secretary Plummer spoke as follows on the subject:

I do not buy a cash register feeling that it is a safeguard against any one trying to rob me. I do not employ that kind of men. I do believe that a cash register is one of the best pieces of furniture that a man can put in his store. I think it should be called a register and leave off the cash altogether. I regard it as a register of my credit sales more than my cash ones.

### Question Box Discussion.

HOW SHOULD GOODS BE MARKED?

This subject was then taken up for discussion. C. T. Rosenthal spoke as follows:

The marking of goods is one of the most important parts of the whole business, and it takes a man that is well up in the Hardware or any kind of business to do it. In my place I do it myself. I fix the price. I do not mark the goods. I do not think it is good policy to let everybody who comes in the store know just what your goods cost. I keep the prices in a book, either singly or by the dozen, and I fix the price. In receiving goods I turn to my price book and invoice and get every price. There I see how it was sold before, and sometimes conditions change and I mark them down, or if freight is higher I mark them up. Otherwise I have them marked by the dozen or by the piece. It takes good judgment to put on the price. You do not want to sell the goods for cost, you want to make something out of them. Sometimes you have to mark them down to a very low price and you do not want to. I put on one price and it works better in this manner. I find in some stores that everybody that comes in finds on the counter how much each piece of goods costs. It is not a good way. I fix the price myself, and if conditions arise I change it myself. In some stores they have the cost price marked on the goods. It is the old style. Some people will not buy unless they can get you down. I say, Mr. So and So, we figure every price in the store, and that is the price at which we must sell. The people who come in my store say they know that they get the value of their money. In some stores almost any one marks the goods. I do not think this is right. It takes an A1 man to do it. He must know the goods, the cost price, and especially the freight. Unless a man is very careful and takes everything into consideration he is apt to sell his goods and make no profit on them.

Vice-President Maxey: There is no doubt in my mind that it is the best way if possible to have one price on goods, but different sections differ so greatly that in some sections it will not do. There are some sections where there are a great many people who if they cannot buy for less than the goods are marked will not buy at all, while others will take them at the figure marked. I believe they should be marked in plain figures. That is the way I run my business, and if I also think it is necessary to make a little concession I do so. As to marking any per cent. on goods, I always examine my goods before I price them. On Implement business we do not make 5 per cent. on some things, so instead of grumbling I try to make up on something else. That is the way I do it.

Mr. Stewart said: I do not believe that locality has anything to do with it, outside of a large city. If you make a man a price and then change it he will lose a certain amount of confidence in you. I find that it works well to have one price and stick to it, even if it is below the marked price.

Mr. Mitchell: I would like to ask the one-price fellows some questions. I would like to sustain one price. I can do it on a Steel Range all right. But how on Barb Wire? If you price it at 25 cents a roll and your competitor finds it out he sells it 5 per cent. lower and gets your trade away. I would like to know what you would do about it. I believe in cutting the price just so it does not go below the cost mark.

Mr. Williams: I agree with Mr. Mitchell. My idea is not to let a customer get away. Every one will go where he finds it cheapest.

IS THIS A GOOD TIME TO BUY WIRE NAILS?

Mr. Rosenthal: No, because Wire Nails are about 60 per cent. above their normal price. I do not think it is a good thing to lay in a heavy stock. I would buy no more than are necessary.

### Election of Officers.

At the Thursday afternoon session the Nominating Committee made the following report, which was adopted and the parties named duly elected:

PRESIDENT, Jno. M. Pittman, Prescott.
FIRST VICE-PRESIDENT, J. F. Maxey, Ozark.
SECOND VICE PRESIDENT, T. B. Stewart, Newport.
SECRETARY and TREASURER, C. E. Taylor, Little Rock.

President Pittman appointed the following committees:

EXECUTIVE COMMITTEE: E. E. Mitchell, Morrilton; W. M. Graham, Clarendon; Hamp Williams, Hot Springs; J. H. Boicourt, Little Rock; R. F. Roys, Russellville.

MEMBERSHIP COMMITTEE: D. E. Watson, Hamburg; C. T. Rosenthal, Batesville; W. A. Jackson, Dardanelle; K. G. McRea, Hope; D. H. Miller, Van Buren.

GRIEVANCE COMMITTEE: J. A. Plummer, Marianna; W. M. Harrell, Conway; W. M. Graham, Clarendon.

COMMITTEE ON FRATERNAL RELATIONS: I. P. Rudolph, Arkadelphia; J. B. Avera; F. L. Curfman, De Queen.

TRANSPORTATION COMMITTEE: Frank Stearns, Hot Springs; J. H. Boicourt, Little Rock; Frank Gregg, Little Rock.

PROGRAMME COMMITTEE: E. E. Mitchell, Morrilton; W. L. Babcock, Hot Springs; R. P. Graham, Fordyce.

Mr. Pittman, the president, was presented with a pair of gold glasses by the association, and Mr. Plummer, the secretary and treasurer, with a gold headed cane. The meeting then adjourned *sine die*.

### Excursion.

On Wednesday evening the local members of the association, assisted by the jobbers, entertained the visiting delegates in a charming and delightful manner through the medium of a moonlight excursion on the Arkansas. A 25-mile sail was had and the occasion was most heartily enjoyed by a party numbering about 200.

## UPSON-WALTON COMPANY.

THE UPSON-WALTON COMPANY, 155-163 River street, Cleveland, Ohio, have just issued a finely printed book of 67 pages, in colors, in which is an encyclical to their customers about Manila, Sisal, Jute and Wire Rope manufactured by them. The matter which is attractively and interestingly presented concerns the past and present history of Rope from the ancients to the commercial present. It is elaborately illustrated, and in the margins are frequent side heads to assist the reader, while at the head of each page is some apt quotation from the classics pertinent to Rope. The descriptive matter is enlightening on the place of origin, growth, preparation and manufacture of Rope in its numerous forms.

## BRITISH LETTER.

Office of *The Iron Age*, HASTINGS HOUSE, NORFOLK ST., LONDON, W. C.

### The Hardware Market.

WE are having almost unexampled June weather. As yet there has hardly been a glimpse of warmth and sunshine; the rains have been exceptionally heavy. This has had a depressing effect upon the retail trade, particularly in season goods. Travelers' order sheets are fairly exhaustive from various seaside resorts, but the home trade is distinctly dull. The Sheffield Cutlery trade is in an especially bad way. Orders are both scarce and small. Evidently retailers are buying from hand to mouth. Medium quality Cutlery is hardly selling at all for home demand. The coronation festivities, in these circumstances, are almost a godsend. They have stimulated the sales of such lines as Cut and Wrought Nails, Hammers, Pliers, Chisels, Saws, Gas Tubing. London lodging house keepers have been laying in new supplies of Spoons and Forks. Coronation medals and badges have been made in large quantities, but I question whether they will prove a remunerative investment. There is necessarily some anxiety as to the probable state of trade after the coronation. On export account it is now evident that those who speculated on a trade boom immediately after the termination of the South African War have been seriously disappointed—at least temporarily. There is a good demand from South Africa for Galvanized Iron, Tubes, Axles, Springs and Railway Materials and Accessories. These lines, it will be observed, are paid for, not by South African residents but by the British Government or by British investors. It is difficult to see any daylight until South African farmers are satisfactorily resettled. Prosperity does not bob up immediately Moloch disappears. It has to be remembered, too, that heavy stocks were already in warehouses in South African ports, and these must be distributed. Judging by appearances, I should say that these stocks will not be dispersed so rapidly as was generally anticipated.

### German Commercial Prevision.

On this point it is worth noting the action of an energetic German firm. During the last three months this firm have been sending large quantities of building material to Cape Town. These shipments covered practically everything required by builders from Iron Girders, Wooden Frames and Chiseled Stone down to Nails and Screws. In addition, a number of skilled German artisans were sent out, some having received an architectural training. They are all now on the spot and look to having a busy time.

### A Disappointing Situation.

In England there is a feeling akin to disappointment, if not despondency, at the turn things commercial have taken. There is certainly no trade boom. Recently good orders have come from India, but indents from Australia are thin. The drought is playing havoc. Canada, Germany and South America are buying brass goods more readily than for some time past.

### Altered Transportation Facilities.

Mention of Canada reminds me that many business men look to the proposed (or is it only the suggested?) Anglo-Canadian shipping combine to aid materially in strengthening trade relations between Canadian buyers and English sellers. In the more special Hardware lines Stamped Hollow Ware is in brisk demand, but Cast Hollow Ware is dull. The sale of Locks of good quality continues good, but inferior qualities are not much required.

---

THE CASE PLOW WORKS of Racine, Wis., are equipping their entire plant with devices for fire protection. The Midland Iron Works have secured the contract for furnishing the Hangers for the automatic fire doors and will put in their new Wilbern Adjustable Fire Door Hanger.

CONTENTS.

# New England Iron and Hardware Association.

THE annual meeting of the New England Iron and Hardware Association was held at Young's Hotel, Boston, Wednesday, June 18, preceded by a dinner at 6 p.m., which was well attended. This association was incorporated under Massachusetts laws in 1894, and is composed of the stockholders and associate members. Its membership includes representatives of Hardware, metal and allied trades, and it has features which make it a model organization of its kind. Some idea of the scope of the work of the association may be gathered from a summary of the reports of chairmen of committees submitted at this meeting.

### Mr. Chase's Remarks.

At the close of the dinner the retiring president, Allan J. Chase, called the meeting to order. After the transaction of some routine business Mr. Chase addressed the members, thanking them for their courtesy and consideration during his term of office and complimenting the retiring Board of Directors on their loy-

OSCAR A. SHEPARD, Newly Elected President.

alty and fidelity. He stated that co-operation was the first object of the association, and that the work in this direction had been successful and a return to old conditions could not be thought of. Changes in the trade, particularly the great and small consolidations in the various branches of manufacturing; the increased expense of doing business, and the consequent greater necessity for pulling together were referred to. Mr. Chase, continuing, spoke in a congratulatory vein, referring to the successful meetings of the past year, which have not only been of value from a business point of view, but have also had an agreeable social side, making the conduct of the business of the association under present conditions a pleasure. Times would change, however, and he counseled care in keeping the organization in good condition to meet the problem of a declining market, so that when depression came the trade would be able to return to a lower level of prices with as little loss as possible.

Mr. Chase called for the reports of officers and committees covering the fiscal year ending May 31, 1902.

### John T. Boyd's Report.

John T. Boyd, clerk, reviewed the meetings of the year, which were held regularly the third week of each month excepting July and August. All of these were well attended and interesting. There were ten meetings during the year, the largest attendance being 121 at the annual meeting. During the year the following were added to the membership roll: E. R. Merrill Spring Company, New York; Peter Gray, Boston; Simonds Mfg. Company, Fitchburg, Mass.; Ordway, Loring & Ricker, Boston; Pierson Hardware Company, Pittsfield, Mass., and Damon & Gould, Fitchburg, Mass. The association lost by death the following members: Henry Curtis Bangs of the Congdon & Carpenter Company, Providence, R. I., and John B. Varick of the John B. Varick Company, Manchester, N. H. The present membership of the association consists of 99 stockholders and eight associate members. It was reported that the general business of the association was constantly increasing in all of its departments, and that the system of classification of expenses adopted some time ago showed that the cost of conducting the association has been no greater proportionately, notwithstanding the necessary increased expenses.

### Bureau of Credit.

One of the most important features of the association is its Bureau of Credit, the annual report of which was submitted by Charles H. Breck, chairman of the committee. During the year this department made a gain in the amount collected, and the committee reported that the work was being conducted in a conservative and intelligent manner, and as time passed the bureau was constantly increasing its business and acquiring additional information in regard to the financial condition of many debtors. It has been of service to many of its members in classifying credits when such information has been sought. This branch of the association was recommended to the members, and it was stated that its work would compare more than favorably with that of any other form of collection agency. The work of the Bureau of Credit is carried on by two department—namely, collection and attorney. The collection department received during the year 1274 claims, of which 811 were collected. This department uses a demand letter, and the cost of making collections by this system is scarcely more than nominal. The attorney's department receives claims from the Bureau of Credit and direct from members. Two hundred and seventy-three claims were collected by this department, a large percentage of those brought to its attention. It was stated that stockholders made every reasonable effort to collect before giving accounts to the bureau. The department of assignment and bankruptcy was also doing excellent work.

### Shelf Hardware Department.

William Chamberlain of Portland, Maine, reported for the Shelf Hardware department, stating that "harmony and good feeling have characterized all its deliberations. Mingled respect and confidence have grown with every meeting of its members, and I venture the assertion that no more generous and considerate body of men can be found in any organization where competing interests are represented. I have heard from every side of the board propositions so unselfish and magnanimous as to seem more like concessions between partners where the interests were mutual than arrangements between competing firms."

### The Metal Trades Branches' Report

submitted by P. E. Strauss of Fitz, Dana & Co., Boston, referred to the unusual events of the past year as follows:

Shortly after our adjournment for the summer the great strike of the American Tin Plate Company's and American Sheet Steel Company's employees was inaugurated, and the result was that prices were so irregular that we deemed it impracticable to meet, and the question of establishing prices was left with the chairman, who after consulting the various members, changed the prices from time to time, as conditions required, and this method of regulating prices was continued by us

with good results to all until December 17, 1901, when we again began to meet at the usual intervals to regulate prices and to discuss such other matters of interest to the members as might come before them.

The next unusual event that came to pass was the great slump in the Copper trade, which culminated in the change in prices by the manufacturers on January 2, 1902. The market for Ingot Copper continuing to decline still further, the manufacturers, on January 23, 1902, again reduced the prices, but it seemed that no sooner had the last change been made when the market started upward, and the prices advanced so rapidly that on February 3, 1902, only 11 days after the second decline, the manufacturers had to advance the prices again to the list adopted by them on January 2, 1902. Such a fluctuation in so short a time, we have been informed, never occured before in the history of the trade in manufactured Copper.

The next event to occur out of the ordinary was the absorption by Richards & Co., Incorporated, on May 1, 1902, of the firm of Farnham & Johnson.

In these days of consolidation and absorption, when great enterprises are launched upon the market, it is not surprising if the thought of such a possible combination in our line of goods should have entered the brains of some of us, and when we were approached with a project tending to that end, a number of our members became parties to it. The promoters had been at work on the proposition for months, and when, early in April, 1902, it was proclaimed to the world at large that the enterprise had been successfully completed, it created no end of excitement and comment, and those of us who were in it, so to speak, saw visions of automobiles, private cars, trips to Europe, California and other parts of the world, rise before us, while the other fellows commenced to wonder where they were at; but, alas, evidently the foundation must have been built on sand (water, most of them say), for in about a month the mighty corporation vanished as if by magic, and the other fellows smiled—and such a smile. This was the last of the unusual events we have to record for the year ending June 18, 1902.

In closing we can only reaffirm what we have stated before, and that is, that the rock of our Metal Association lies in our honesty of purpose toward each other, maintenance of prices and terms agreed upon, confidence in each other, and by the adoption of a high standard in our business methods toward each other and our customers. Our meetings have proved a source of profit and benefit as well as pleasure to each and all of us.

### Wooden Ware Committee.

A. F. Whittier reported for the Wooden Ware Committee, saying: "We consider that in our line of trade there are two important objects in commercial intercourse, the first being a strict adherence to any prices which may be agreed upon, and this has been carried out in all our operations during the past year. The second is to keep intact good fellowship among the members of the department, which is the condition at the present time."

### Paints and Oils.

George L. Gould, chairman of the Committee on the Paint and Oil Trades, stated that business since January 1 had been better than for many years, but that profits have been small, largely because of competition, not only among members themselves, but through other dealers, and more particularly manufacturers from places outside of New England.

### Saddlery Committee.

John H. Coffin for the Saddlery trade reported that some of the existing evils due to competition had been discussed during the year and agreements entered into, the results of which have been beneficial.

### Election of Officers.

At the close of the committees' reports the annual election was held, which resulted as follows:

PRESIDENT, Oscar A. Shepard of Shepard, Clark & Co., Boston.
VICE-PRESIDENT, H. W. Waite of Waite, Ranlett & Co., Boston.
CLERK, John T. Boyd, Boston.
TREASURER, Charles H. Breck of Joseph Breck & Sons' Corporation, Boston.
DIRECTORS: O. A. Shepard, H. W. Waite, John T. Boyd, Charles H. Breck, George P. Dexter, M. McBarron, C. F. Bragg, William Chamberlain, John H. Coffin, Charles W. Henderson, Jr.

### President-Elect Shepard's Address.

At the conclusion of the ballot, Allan J. Chase introduced President-elect Shepard, who spoke as follows:

If I do not express myself as fully as I ought this evening it is only the inadequacy of the power to find words to do so. I appreciate the confidence, the friendliness and the support implied in the ballots which elects me your president for the ensuing year.

To be a member of this association, in my mind, is an honor; to be chosen to occupy this chair is an honor that a man must indeed be dull not to appreciate. Coming among you almost a stranger, representing a line of business dependent upon New England alone for its output, thus making it a smaller business than many of those represented by our association, we consider (and I now speak for my colleagues of the Wooden Ware trade) we consider it a compliment and an honor that you should see fit to choose one of our number for your president.

There is one point I wish to make; this association, with its magnificent personnel, composed of gentlemen, not some of the best in New England, but in my mind, the very best; composed of firms, not among the brightest of New England States, but the very brighest. With its capital representation of about $100,000,000, and, if you want to include the United States Steel, Carnegie Steel and Cambria companies, the representation of capital rises like the thermometer in August until it reaches $2,000,000,000.

#### PLEASURE OUT OF BUSINESS.

With its finely equipped offices, with its own financial standing, as seen by our treasurer's report, this association can do whatever any other association of like character can do, and a little more. This association stands for much. It stands for all that is best, just and practical in commercial intercourse. There is one thing in particular that it stands for that I wish to dwell upon to-night. It stands for that which is written upon every act of our lives, whether we are little children at play, whether we are boys in school, whether we are men in business. Every act of our lives consciously or unconsciously has upon it written one word; every broad avenue, every narrow road, every little by-path which we have trodden or will tread, leads to one opening across which is written one word, and that is happiness.

You never knew a man to do a thing deliberately, when in his right mind, that would bring him unhappiness. Inadvertently or through error of judgment, men sometimes do things that bring them unhappiness, but never willingly. Every gentleman here to-night, whether he has been in business one year, ten years or 50 years, has one pet idea in view. You intend, when you feel you have gotten things fixed right, to cut off this business activity and devote the remainder of your days to a vacation of semihappiness. It is right that you should. You have well earned it, but the trouble is, gentlemen, you put it off too long, and when you finally make up your mind that the time is ripe, too often we find that the principals we have developed, the inclinations and tendencies which have been developed, stand in our way of a life of pleasure; and we find too often just the principles which were developed that made us successful business men are an utter contradiction to a life of ease. If we do not find this we are apt to find that we have developed some physical organic ailment that makes a life of pleasure a farce.

If this is so, then it behooves us, and I enjoin upon you gentlemen the necessity of getting what pleasure we can out of every day life, and, as our every day life is our business life, we must get our pleasure out of our business. Make your business as near a thing of happiness as possible. Get from your business all the pleasure that is practical, and this is where the New England Iron and Hardware Association helps you if you will allow it. It comes into your business life as a mediator in the controversies that arise between natural com-

petitors. It is the leveler of disagreeable mounds upon the great lawn of commercial life.

FRETTING OVER LITTLE THINGS.

Your man with his 300-pound Roller goes out in the morning and rolls down the little disagreeable hubbles upon your lawn; thus the New England Iron and Hardware Association levels off the great lawn of business, making it one broad expanse, beautiful to look upon, practical in application.

One more point I wish to make. There is one little thing that troubles you business men, and it is the *little* things that trouble you; the large things you are equipped for; you invite them; you expect them and you tackle them with a tenacity that surprises yourself; but the *little* things fret you; the little things make the hair grow gray on the sides of your faces. Your barber tells you it is because he rubs the lather in when he shaves you, but it is not. It is the little things that cause these deep indentations between your eyes. They are not dimples; they are frettings.

The collection of your accounts troubles you. Delinquents you have with you always. When you buy goods at a low price, employ salesmen to sell them, shippers to ship them and bookkeepers to carry them through your books, at the end of 60 or 90 days, that money belongs to you, and you ought to have it, but you don't get it always.

There are two ways of collecting accounts; one is to collect them by law and lose your customer, and if he should ever become good he will never speak a good word for your firm and never buy goods of you again. Another way is to collect them by law and save your man, and if he should remain or again become solvent he may become a valuable customer.

This is what the Iron and Hardware Association Collection and Attorney Department will do for you. It collects your bills so easily that it is a pleasure to the debtor to be sued by this department. My advice to you gentlemen is, that if you have not used the Iron and Hardware Association for these things, don't neglect it. If you have used it, use it more. Send to our Mr. Haley some of the hardest bills you have to collect and let him surprise you with what he can do with them. Then send him some easy ones.

Gentlemen, I appreciate this honor, and I also realize the responsibilities and the hard work which I must accomplish to fill the place of so good a gentleman as my immediate predecessor, Mr. Chase; but when I look at the solid Board of Directors, with which you have honored me, I can only say that as far as they are concerned, the affairs of the association are in good hands. I thank you.

Later there were informal talks on the past and future of the various trades by E. P. Sanderson, Samuel A. Bigelow, William Chamberlain, H. M. Lothrop, John H. Coffin, John Spears, John D. Morton, George L. Gould, Charles Clark Adams and Henry L. Pierson.

At intervals during the evening songs were given by Sewall R. Payson.

The meeting adjourned at 10 p.m., and the association will not come together again until early in the fall, at which time it is proposed to have an outing.

## ORIENTAL COMMERCIAL & SHIPPING COMPANY.

THE ORIENTAL COMMERCIAL & SHIPPING COMPANY is the name of a business incorporated July 12, 1901, with an authorized capital of $25,000, part of which has been paid in, for the purpose of representing American manufacturers in the Orient, especially in the Philippines, China and Japan. They have also established agencies with representatives in Hong Kong, Yokohama and Manila and contemplate establishing one at Shanghai. H. L. Van Winkle, the secretary of the company and manager of sales in the East, has arrived at Manila after a satisfactory trip through the principal cities of China and Japan. The main office in the Orient will be at Manila, the head office of the company being in San Francisco, in charge of T. H. Speddy, president and treasurer. We are advised they now represent a number of American manufacturers of rolling mill products, Heavy Hardware, &c., and are desirous of corresponding with others who may be interested in a representation in these countries. Mr. Speddy and Mr. Van Winkle are responsibly referred to as energetic, experienced and reliable salesmen of correct habits.

## REQUESTS FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

The establishment of the Garver Bros. Company, wholesale Hardware, Paints, Harness, Oils, Stoves, &c., Strasburg, Ohio, was entirely destroyed by fire on the 16th inst. They will value early copies of catalogues and price-lists of general Hardware.

P. T. Prather Company have just established a manufacturers' agency at Dallas, Texas, for the purpose of representing manufacturers of Shelf and Heavy Hardware and Builders' Hardware, and would be pleased to receive catalogues and discount sheets from such factories as wish to place their accounts in the hands of a manufacturers' agency. They employ their own traveling men, who call on the jobbing trade of Texas at regular intervals.

Hooker, Hensley & Co. have purchased a building in Checotah, I. T., and will put in a stock of Hardware and furniture. They would be pleased to receive catalogues and price-lists pertaining to the general Hardware line.

## TRADE ITEMS.

CHASE, PARKER & CO., wholesale dealers in Carriage Makers' Supplies, Iron and Steel, &c., have removed from 33-35 Pearl street, Boston, Mass., to 81-83 Pearl street, which is only a few doors from their old store on the same street, where they have larger and better facilities for conducting their business. Chase, Parker & Co. have been located on Pearl street, in the vicinity of their present store, for over 25 years.

THE BRUNHOFF MFG. COMPANY, formerly of Hamilton, Ohio, are now located at the corner of Ninth street and Freeman avenue, Cincinnati, Ohio. They will continue the manufacture of Combination Locks, Tobacco Cutters, Cigar Cutters and Cigar Lighters.

JOHN A. WALKER, vice-president and general manager of the Joseph Dixon Crucible Company, Jersey City, N. J., and 64 Reade street, New York, sailed for Europe on the "Kaiser Wilhelm der Grosse," June 17, for a six to eight weeks' tour of Europe. While he will get some pleasure from the trip, the principal purpose of it is to visit their London branch and the various Dixon agencies on the Continent.

JAMES D. RAWLES, formerly sales department manager of Bigelow & Dowse Company, Boston, having severed his connection with that company in April last, has just returned from an extended trip through the South and West to the Pacific Coast and has associated himself with Frederic H. Butts, having acquired an interest in the Butts & Ordway Company. He will assume charge of the sales department of that company. Mr. Rawles is well known in the Boston Hardware trade, having begun his career with Macomber, Bigelow & Dowse in the seventies, representing them as salesman through the State of Maine during the eighties, and later handling the Bicycle and Hardware sales departments. With additional working force the Butts & Ordway Company will push vigorously their well established trade in Iron and Steel, Heavy Hardware and Carriage Makers' Supplies.

THE KIRK-LATTY MFG. COMPANY, Cleveland, Ohio, announce under date of the 21st inst. that they have recently purchased the machinery, tools, &c., of the Metal

Goods Mfg. Company of that city, and will continue the manufacture of their line of Children's All Steel Express Wagons, Velocipedes, Wheelbarrows, &c. The Kirk-Latty Mfg. Company have just completed extensive additions to their plant, more than doubling its capacity. They state that their newly acquired line of all Steel Wagons, Velocipedes, &c., will continue to be first-class in every respect, and that the most careful attention to customers' accounts and prompt deliveries of orders will characterize this department of their business.

## PRODUCTION OF WIRE AND CUT NAILS.

THE statistics given below have been taken from the report of the American Iron and Steel Association, which has just been issued:

### Production of Wire Nails.

The production of wire nails in the United States in 1901 amounted to 9,803,822 kegs of 100 pounds, as compared with 7,233,979 kegs in 1900, an increase of 2,569,843 kegs, or over 35 per cent. In 1899 the production amounted to 7,618,130 kegs, in 1898 to 7,418,475 kegs, in 1897 to 8,997,245 kegs, in 1896 to 4,719,860 kegs and in 1895 to 5,841,403 kegs. The wire nails made in 1901 were manufactured by 61 works, as compared with 56 in 1900. The production in 1901 was greatly in excess of that of any other year, exceeding by 806,577 kegs that of 1897, the year of next largest production.

The following table gives the production of wire nails in 1899, 1900 and 1901, in kegs of 100 pounds:

| States.—Kegs of 100 pounds. | 1899. | 1900. | 1901. |
|---|---|---|---|
| Massachusetts, Rhode Island and Connecticut | 176,877 | 212,584 | 71,553 |
| New York | 49,603 | 63,466 | 136,118 |
| Pennsylvania | 2,905,211 | 2,158,399 | 3,118,508 |
| Maryland, West Virginia, Kentucky, Alabama and Ohio | 2,154,823 | 2,516,391 | 3,633,894 |
| Indiana and Illinois | 2,184,662 | 2,195,672 | 2,716,748 |
| Michigan, Wisconsin, Kansas, Washington and California | 146,954 | 87,467 | 127,001 |
| Totals | 7,618,130 | 7,233,979 | 9,803,822 |

### Production of Cut Nails.

Our statistics of the production of iron and steel cut nails and cut spikes do not embrace railroad and other spikes made from bar iron, wire nails of any size, or machine made horseshoe nails. Spikes cut from plates are included with cut nails.

The total production of cut nails in 1901 was 1,542,240 kegs of 100 pounds each, against 1,573,494 kegs in 1900, a decrease of 31,254 kegs, or a little less than 2 per cent. In 1886 the maximum production of 8,160,973 kegs was reached. In 1901 the production of wire nails exceeded that of cut nails by 8,261,582 kegs, in 1900 by 5,660,485 kegs, in 1899 by 5,713,790 kegs, in 1898 by 5,846,254 kegs and in 1897 by 6,890,446 kegs.

Eleven States made cut nails in 1901, one more than in 1900. The following table shows the production of iron and steel cut nails by States from 1896 to 1901, in kegs of 100 pounds. The wire nail production is added to the table. The decreased production of cut nails in Ohio in 1901, as compared with previous years, is due to the fact that two of its leading producers recently installed wire nail machines, and were engaged in the manufacture of both kinds of nails last year, their cut nail production in 1901 being much smaller than in former years:

| States.—Kegs. | 1896. | 1897. | 1898. | 1899. | 1900. | 1901. |
|---|---|---|---|---|---|---|
| Pennsylvania | 646,011 | 1,057,964 | 768,171 | 920,133 | 777,611 | 833,469 |
| Ohio | 264,272 | 411,396 | 392,003 | 386,215 | 261,216 | 123,788 |
| West Virginia and Indiana | 286,210 | 290,203 | 184,942 | 178,006 | 168,469 | 150,222 |
| Massachusetts and New Jersey | 137,005 | 142,021 | 127,706 | 149,700 | 155,968 | 179,474 |
| Illinois | 91,145 | 34,000 | 87,399 | 255,286 | 193,230 | 240,657 |
| Maryland, Virginia and Kentucky | 167,227 | 164,465 | | | | |
| Missouri, Wisconsin, Colorado, Wyoming and California | 24,000 | 6,750 | 12,000 | 15,000 | 17,000 | 14,630 |
| Total cut nails | 1,615,870 | 2,106,799 | 1,572,221 | 1,904,340 | 1,573,494 | 1,542,240 |
| Total wire nails | 4,719,860 | 8,997,245 | 7,418,475 | 7,618,130 | 7,233,979 | 9,803,822 |
| Grand totals | 6,335,730 | 11,104,044 | 8,990,696 | 9,522,470 | 8,807,473 | 11,346,062 |

## LALANCE & GROSJEAN MFG. COMPANY.

LALANCE & GROSJEAN MFG. COMPANY, 19 Cliff street, New York, have thoroughly renovated their offices and sample rooms at this address. New ornamental metal ceilings and wainscoting have been put in throughout and tinted, together with hard wood floors, entirely new furniture, such as desks, chairs, &c., and a number of other such conveniences. On the wall in the main office are two large framed pictures, one of which represents the great plant at Woodhaven, L. I., where is manufactured Nickel-Steel Ware and the various other classes of goods such as Japanned and Tin Ware, Galvanized Goods and numerous special articles for the trade which are made to order. The other picture represents their large rolling mills at Harrisburg, Pa., where is manufactured from the billet different kinds of sheet iron and tin plate used at Woodhaven. In marked contrast with these two immense plants as they exist to-day is a small colored print of the Woodhaven shops representing them as they appeared in 1863, at that time called the "Spoon factory."

On the top of the main building at Woodhaven they have recently installed an electrical sign 340 feet long, with letters 8 feet high, showing the words Nickel-Steel Ware, which is probably the largest sign of the character in existence.

In the New York office they have a souvenir of the Spanish War in the form of an ordinary Nickel-Steel Agate Ware Cup, which was one of a large number presented to Troop C, New York Volunteer Cavalry, who in May, 1898, were entertained by A. J. Cordier, the vice-president of the company, at Woodhaven Junction, while *en route* from Camp Black to Camp Alger, and afterward Porto Rico. Each member of the troop, after being entertained at Mr. Grosjean's mansion nearby, was presented with one of these Cups, this particular one having been returned with the evidence of service on it by Charles Curie, Jr., of the law firm of Curie, Smith & Maxwell of this city, who was a member of the troop.

## E. C. ATKINS & CO.

THE annual meeting of the stockholders of E. C. Atkins & Co. was held at the office of the company at Indianapolis, Ind., on May 28. The Board of Directors reported the largest and most successful year in the history of the company. The following officers and directors were elected for the ensuing year: Directors: H. C. Atkins, M. A. Potter, N. A. Gladding, A. D. Gates, T. R. Kackley. Officers: President and superintendent, H. C. Atkins; vice-president and secretary, N. A. Gladding; treasurer, M. A. Potter; assistant treasurer, A. D. Gates; cashier, F. C. Gardner. E. C. Atkins & Co. announce that during the months of June, July and August their works and office will close at noon on Saturdays. They request their customers to arrange their orders, as far as possible, to reach them in time for early Saturday shipment.

MEMBERS of the New York State Hardware Jobbers' Association are enthusiastic in referring to their entertainment at Buffalo, and the courtesies which were extended to them by Sidney Shepard & Co. and Weed & Co. Among those who were especially attentive to the visitors were Charles W. Wells and James F. Foster of Sidney Shepard & Co., who, in connection with Mr. Weed, did much to make the excursion a success.

## McCABE HANGER MFG. CO.'S GROWTH.

McCABE HANGER MFG. COMPANY, 532-542 West Twenty-second street, New York, have just thoroughly remodeled and greatly improved their office, at the same time increasing their staff and facilities for handling a large correspondence. They are now considering some special methods for introducing their Hangers and Track for any kind of doors, in towns whose trade does not warrant the sending of one of their salesmen. One of the three new offices will be fitted up as a showroom, displaying Door Hangers and Fixtures in various forms, to which they invite the attention of the trade when in the city.

The main part of their business is the manufacture of Hangers and Track for all kinds and conditions of sliding doors, no matter how peculiar, a late commission being the installation of their Hangers in the Clarence H. Mackay stable, on his new estate at Roslyn, Long Island, aggregating nearly $1000 in cost, one of the eccentricities in this case being curved tracks. They call attention to the fact that they are specially fitted to take charge of high-class work. The company have recently been giving increased attention to plans and specifications drawn in the offices of New York architects and the vicinity, their location here giving them special advantages. They have a corps of expert mechanics who are detailed as necessity requires to go to the office of the architect and answer technical questions or make any desired changes in existing conditions from the standpoint of practicality.

## PRICE-LISTS, CIRCULARS, &c.

CHICAGO SPRING BUTT COMPANY, Chicago: Catalogue of the Chicago Double Acting Spring and Blank Butts, Single Acting Blank Butts, Triple End Spring Butts, Ball Bearing Floor Hinge, Lavatory Door Hinges, Double Acting Saloon Door Hinges, Fire Engine House Spring Hinges, Door Springs, House Numbers, Hangers, &c.

GEO. ERTEL COMPANY, Quincy, Ill.: The company issue two catalogues, one describing their improved Victor Incubators and Brooders, and the other the Ertel Baling Presses.

CHICAGO HOUSE WRECKING COMPANY, Chicago: The company, who purchased and dismantled the late Pan-American Exposition at Buffalo, issue a catalogue describing the material and giving the prices they are asking for it.

NEW JERSEY ALUMINUM COMPANY, Newark, N. J.: Catalogues of novelties for advertisiug and souvenir purposes. They are accompanied by a price-list.

THE CHICAGO SCREW COMPANY, Chicago, Ill.: Catalogue of their manufactures, including Set and Cap Screws, Collar Screws, Iron and Brass Machine Screws, Hexagon Nuts, Taps, Tap Drills, &c.

BUTLER BROTHERS, New York: This concern, who sell to dealers exclusively, issue the June condensed edition of "Our Drummer," bringing their unabridged catalogue No. 401 up to date. The June catalogue contains nearly 200 pages, with illustrations and prices, and covers a general line of merchandise, including Hardware and House Furnishings and Fire Works.

THE AERMOTOR COMPANY, Chicago: Catalogue and price-list of Aermotors, Aermotor Cylinders, Bell Towers, Pumps, Tanks, Valves, &c.

C. T. WILLIAMSON WIRE NOVELTY COMPANY, Newark, N. J.: Advertising Novelties. Booklet No. 45 shows Cork Screws, &c., lettered with names of firms, for which no extra charge is made. Leaflets are devoted to Wire Hooks and Sundries, Champagne Taps, Cork Pullers and Cork Screws.

DEERING HARVESTER COMPANY, Chicago, Ill.: Catalogues devoted to Hay, Wheat, Corn and Rice Harvesters, Binder Twine, &c.

ROME MFG. COMPANY, Rome, N. Y.: Nickel Plated Copper Ware. An illustrated catalogue and price-list is devoted to Tea and Range Kettles, Tea and Coffee Pots, Wash Boilers, &c.

THE ARNOLD-CREAGER COMPANY, New London and Cincinnati, Ohio: Catalogue of Brick and Tile Yard Supplies, containing illustrations, descriptions and prices.

THE VIM COMPANY, Chicago, manufacturers of Solid, Pneumatic and Cushion Tires, Rubber Goods and Bicycles Sundries: An illustrated booklet and price-list of the Alligator Puncture Proof Self Healing Tire; the Alligator Puncture Proof Double Tube Tire; Inner Tubes, which are made in four styles—namely, Butt End, Continuous, G. & J. and Dunlop. The merits of the Vim Puncture Fluid are also alluded to.

J. STEVENS ARMS & TOOL COMPANY, Chicopee Falls, Mass.: Stevens-Duryea Automobiles. These carriages are of the gasoline type, and are referred to in an illustrated pamphlet as speedy, efficient and reliable. It is explained that a gallon of fuel is sufficient for a 30-mile run, and that the carriage is started from the seat. Catalogues will be mailed upon application.

THE NOERA MFG. COMPANY, Waterbury, Conn.: Catalogue No. 9 of Oilers, Torches, Lamps, Lawn Sprinklers, Water Filters, &c.

HOPSON-HAFTENKAMP COMPANY, Grand Rapids, Mich.: Tinners' and Roofers' Supplies, Air Tight Stoves and Furnaces. A catalogue and price-list of 120 pages illustrates a large line of the foregoing goods.

ST. ALBANS FOUNDRY & IMPLEMENT COMPANY, St. Albans, Vt.: Catalogue No. 23. This applies to their agricultural department, which includes Tread and Sweep Powers; Stalk, Ensilage and Cane Shredders; Fodder Cutters, Threshers, Separators, Cleaners, &c.

## AMONG THE HARDWARE TRADE.

Plummer & Wheeler, Hardware dealers, Petersburg, Va., have been succeeded by the John F. Plummer Company, who will continue the wholesale and retail business in Hardware, Stoves, Agricultural Implements, Sporting Goods, Wooden Ware, Carriage Material, &c.

Keneipp & Grimwood, in the Hardware, Stove, Harness and Lumber business, Owensville, Ind., have been succeeded by Grimwood & Co.

W. J. Bush has disposed of his interest in the Hardware, Stove, Roofing and Plumbing business of Bush & Martin, at New Bethlehem, Pa., to Chas. H. Heath, formerly of Oak Ridge. The new firm style will be Heath & Martin.

Frank K. Briggs and Harry G. Davis have opened a new store at Norwalk, Conn., under the style of the Norwalk Hardware Company. They carry a stock comprising Shelf and Heavy Hardware, Agricultural Implements and Sporting Goods.

Smith, Peck & Schantz, in the Agricultural Implement business at Grand Rapids, Mich., have recently been succeeded by Smith & Schantz.

G. B. Cadwell & Son have purchased the Hardware, Stove and Tinware business of Van McCurdy, at Atlantic, Iowa.

Cords Bros. are successors to Edward F. Cords in the retail Hardware, Stove and Sporting Goods business in Elkader, Iowa.

Heasley & Simpson, Marion, Ill., whose store was damaged by fire a short time since, will sell their stock of Hardware, July 1, to William B. Rochester, who will close out part of the old stock and put in a large assortment of new goods.

Peters & Hardin, dealers in Hardware, Stoves and Sporting Goods, Gretna, Neb., have disposed of their business to Sanborn Bros.

A. Engler has sold his Hardware business at Cooperstown, N. D., to Evenson & Allen, who have renovated the store interior and put in a new plate glass front.

The capital stock of the Simmons Hardware Company, Beaumont, Texas, wholesalers and retailers of Hardware, Stoves, Tinware, &c., has been increased from $10,000 to $20,000. The company make a specialty of Guns and other Sporting Goods.

Davis & Co., Blairstown, Iowa, have been succeeded in the Hardware business by Frank M. Davis.

George E. Gomley has succeeded Geo. E. Fairbanks & Co. in the Hardware, Stove, Agricultural Implement, Sporting Goods and heating and plumbing business, at Abington, Mass.

The Schunk-Marquardt Company, Toledo, Ohio, wholesale and retail Shelf Hardware, Stoves, Tinware, Sporting Goods, Paints, Oils, &c., have been incorporated with a capital stock of $100,000.

F. P. Meachy has disposed of his General Hardware and Farming Implement business in Carleton, Neb., to Kelso & Weimer.

New York Hardware Company, Chandler, O. T., have been incorporated with a capital of $10,000. Their line comprises Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods, Plumbing Goods, &c.

Marriott Bros., in the Hardware business at Baraboo, Wis., have been succeeded by Settergren & Pittman.

Vining Hardware Company have succeeded James Gordon at Vining, Kan. They will add a Harness department to the business.

King & Sawyer have purchased the Hardware and furniture business of C. P. Fredendoll, at Cushing, Iowa.

M. L. Brady has removed his Hardware, Stove and Harness stock from Sulphur Springs, Ark., to Lenapah, Ind. Ter.

Edward E. Eckel and Charles B. Brand opened a new store at 123 South Main street, Chambersburg, Pa., on April 12, for the sale of Hardware, Paints, Oils, &c. Mr. Brand has been in the Hardware line many years, both in the store and on the road, while Mr. Eckel has had considerable experience as a business man in other branches.

## MISCELLANEOUS NOTES.

### Putnam Cold Rolled Nails.

The Putnam Nail Company, Neponset, Boston, Mass., announce that they are ready to receive orders from the trade for their new Putnam cold rolled nail. This nail they represent as being made from their regular Putnam C. B. K. brand of Swedish iron, and as it is drawn down on all sides simultaneously produces a most serviceable and reliable horseshoe nail of uniform form and quality, and will, it is stated, stand the test of the most strenuous horse action. The trade will no doubt welcome the advent of this new nail, which the manufacturers will only dispose of through the regular channels, as they do not sell direct to the consumer.

### The Y-R Fly Killers.

The Wire Goods Company, Worcester, Mass., are putting on the market the Y-R fly killers, which are made in two styles, with twisted wire handle and black enameled wooden handle. There is a kink in the outside wires, and the binding cord across the face of the brush is tied into the kink and thus kept securely in place. It is explained that the brush wires are fastened to the handle by an improved method, the handle and brush being joined so as to be practically one piece. The killers are packed ready for delivery to the customer, each killer being wrapped and protected by a paper cover, thus making a saving to the merchant, besides keeping the killers in good condition for sale. Among the points of excellence mentioned by the manufacturers are the following: That the handle will not break where the brush is joined, that the handle and brush will not come apart and that the brush will keep in shape.

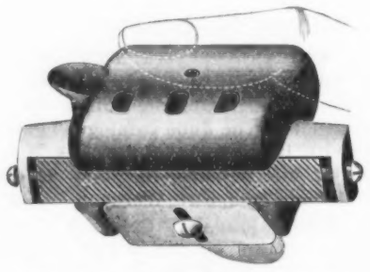
### The .32-40 Ballard and Marlin Cartridge.

The Marlin Firearms Company, New Haven, Conn., are offering the regular .32-40 Ballard and Marlin cartridge loaded with high pressure smokeless powder, giving a velocity, it is remarked, of over 2000 feet per second with a 165-grain jacketed bullet, either hard or soft nose, as against 1400 feet per second velocity with the regular black powder or low pressure smokeless load. The cartridge is shown in the accompanying cut, and is recommended as suitable for use in all Marlin rifles model 1893 having special smokeless steel barrels. The proper charge of powder for the cartridge is 24 to 24.5 grains of Laflin & Rand Lightning smokeless powder. The accuracy of the cartridge is referred to as surprising, considering its high velocity. The company state that there is no difficulty in keeping ten shots in a 2-inch circle at 100 yards, or in a 4-inch circle at 200 yards, using an ordinary Marlin hunting repeater. This is the first straight taper shell to be put on the market for high velocity, it is stated, and the company regard it superior to any bottle necked shell. For antelope, mountain sheep or goats, deer, moose, caribou, elk, bear or similar game the company recommend the .32-40 Marlin using high pressure smokeless loads. The regular black powder loads can be used where less power is desired.


*The .32-.40 Ballard and Marlin Cartridge.*

### The Acme Lawn Mower Sharpener.

A. E. Faber, Jr., 355 Mulberry street, Newark, N. J., is offering the lawn mower sharpener here illustrated. A groove in the cylinder shaped piece of metal holds a three-corner file by the aid of set screws. The cylinder is held in a metal clasp in such a manner that it may be revolved to bring the file to a proper angle with the mower knives. The projection of the metal clasp at the top of the file rests on the face of the knife, while the gauge below is adjustable to the thickness of the knife.



*The Acme Lawn Mower Sharpener.*

In use the file is drawn along the edge of the mower knives to sharpen them. When one side of the file becomes dull it can be taken out, turned over and replaced, bringing a new and sharp face into use. The files are especially made for the sharpener, and can be obtained in any quantity. The clasp is japanned, the cylinder coppered and the adjustable gauge is tinned. The manufacturer remarks that the sharpener will last a lifetime, and that the operation of sharpening a mower with it is speedy and simple; also that articles such as scissors, knives, skates, &c., may be sharpened with the tool.

## Perfect Feed Bag.

The Taylor & Wilson Company, 107 Front street, New York, have recently put on the market an improved form of the Perfect feed bag, as here illustrated, which is referred to by the manufacturers as a portable manger,

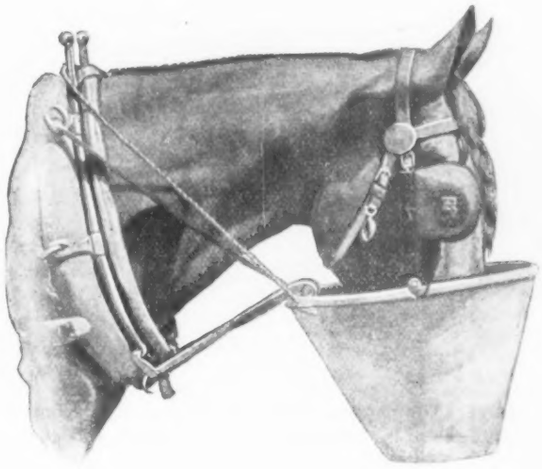


*Fig. 1.—Perfect Feed Bag.*

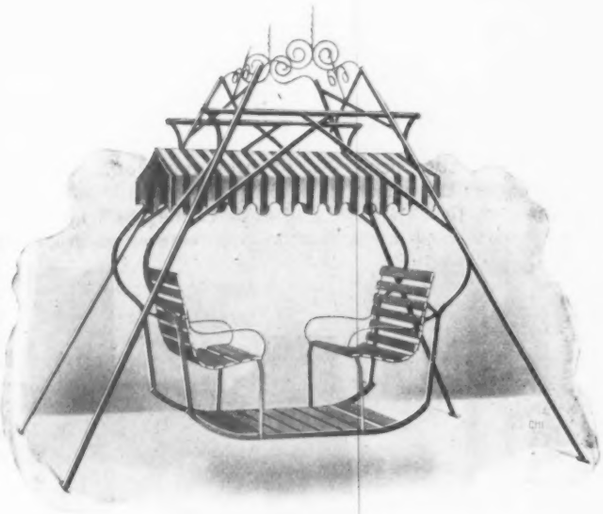
and differing radically from the ordinary bag suspended from the top of the horse's head. The bag is held securely in place by a hinged brace, the two prongs of one end of which are held by the lower hame strap, with an additional support afforded by a rope which passes over the hame tips. The bag is made of a good quality of cotton duck, sewed over a strong hinged frame of formed sheet metal of suitable gauge. The top dimensions are 18 inches in length by 13 inches wide. It is 12 inches deep, with a circular bottom 8 inches in diam-


*Fig. 2.—Bag Collapsed with Feed In It.*

eter. The hinged brace is of the same strong material, two pieces being riveted in the center and so shaped as to greatly strengthen it, while leaving no sharp edges, it being 15 inches long, about 4 inches wide at the extremes and much narrower in the center. By the use of this device the horse can feed as comfortably as from a manger and raise his head as often as necessary without tossing the contents of the bag out of it. Fig. 2 shows how by putting in it the feed for the horse when leaving the stable it can be collapsed into portable form, thus carrying the contents conveniently, and at the same time protecting the provender from dust or dirt. Among the advantages possessed by this article, to which attention is called by the manufacturers, are the great saving in feed and the durability of the bag.

## Eagle Steel Lawn Swing.

A. Buch's Sons, Elizabethtown, Pa., are manufacturing the Eagle four-passenger folding steel lawn swing, shown in the accompanying cut. The chairs always retain the same position regardless of the rise and fall movement of the swing, while special attention is called to the folding feature of the swing, which, it is stated, can be set up in five minutes and taken down in less time and stored in a very small space. It is shipped in

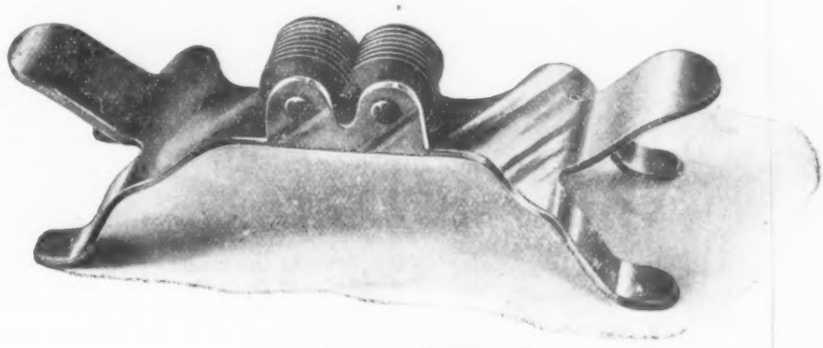


*Eagle Steel Lawn Swing.*

two parts and can, it is said, be set up by a child without instruction. The swing is constructed entirely of special high carbon steel, excepting the slats in the seats and platforms, which are of hardwood lumber of the best material. The platform extends full length under the seats, thus acting as a guard. The swing has no shearing points to injure those who use it, and when not otherwise ordered, is shipped with long canopy bound with braid, with scroll work on top.

## The Elyria Knife Sharpener.

The Worthington Mfg. Company, Elyria, Ohio, are offering the knife sharpener shown herewith. It consists of a nickel plated steel frame, upon which are mounted two rollers. In use the sharpener is held at one end and the knife blade is drawn between the rolls.



*The Elyria Knife Sharpener.*

## Baker's Ball Bearing Barrow.

The accompanying cuts relate to a ball bearing wheel barrow offered by the Champion Thresher Company, Orrville, Ohio. The ball cups are of 13 gauge cold rolled steel, stamped in one piece, and are referred to as being indestructible. Each one contains 12 bicycle balls and also forms a clamp or metal band surrounding three

*Fig. 1.—Baker's Ball Bearing Barrow.*

sides of the handles, to which they are bolted to form a strong wheel attachment. The tray is alluded to as being much larger than commonly used, and as being hung on scientific principles, to throw much of the load directly over the wheel. It is so equalized and balanced, it is stated, that 4½ cubic feet of earth may be wheeled on the barrow with less effort than is required to handle

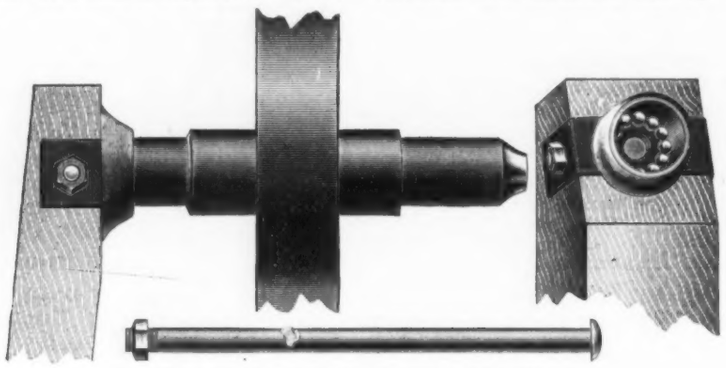


*Fig. 2.—Baker's Wheelbarrow Ball Bearing.*

half that quantity on ordinary dump barrows; also that all friction is removed and that the effort of pushing is lessened 50 per cent. The wheel is of steel, 16 inches in diameter, with 1½-inch flat tire and ⅝-inch spokes shouldered and riveted. The hub is chilled and concaved on the ends where the balls race.

## The Wilbern Adjustable Automatic Fire Door Hanger.

The Midland Iron Works, Racine, Wis., are offering their new adjustable automatic fire door hanger, shown

*The Wilbern Adjustable Automatic Fire Door Hanger.*

herewith. It is made entirely of malleable iron, and has hardened steel roller bearings. A lateral adjustment is secured by a threaded axle, while a vertical adjustment is secured by the aid of the plate and ratchet on the arm. A lug on the arm passes under the track to prevent jumping off the track. A strong rib running through the middle of the arm and an offset below the lug are for strengthening the hanger at the points where the strain is the greatest. It is remarked that the hanger is suitable for any size of door, as different sized supports for the track are used for different thicknesses of doors. The hangers render it possible, it is explained, to hang doors perfectly true to the casings and close to the wall and floor, making them as tight as a hinged door, precluding the possibility of drafts. After doors are hung they do not have to be taken down for adjustment, it is pointed out, as scraping or binding can be corrected in a moment's time by the use of a wrench without taking the door down. This is alluded to as a great saving of time and repairs, as fire doors must be kept in perfect working order. It is shown that by the use of the vertical adjustment doors can be made square if desired, a saving of time and material.

## The Ideal Ironing Attachment.

The Ideal Mfg. Company, New Haven, Conn., have just brought out the ironing attachment, shown herewith, for their shell trimmer, which was illustrated in *The Iron Age*, May 22, 1902. The attachment is to be used before reloading, and is for rolling or ironing pa-


*The Ideal Ironing Attachment.*

per shells at the muzzle to harden and solidify the soft portion that had previously been crimped. It is explained that the lever B, with the roller I, may be used in place of the cutter in the trimming machine. The width of the roll is great enough to lap over the end of the shell at the muzzle and reach beyond the portion that was originally crimped. If shells are long enough to permit cutting off the whole of the softened and frayed ends the ironing process will not be required.

## Lineman's Cart.

The Dicke Tool Company, Downer's Grove, Ill., are offering a lineman's cart to take up and play out telephone wires, shown in the accompanying cuts. The frame of the cart is made of pipe, to render it durable. The box is of wood, 34 x 19 x 10 inches in size, the edges being bound with band iron. It is provided with iron

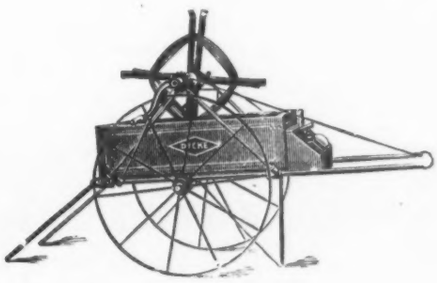


*Fig. 1.—Lineman's Cart.*

wheels, 36 inches in diameter. A small tool box is attached to the front of the cart to accommodate some of the tools which may be needed in repairing a line. In Fig. 2 the bearing for the reel is shown, the reel being designed to wind up or play out wire, as the case may be. The entire cart is painted in suitable colors. It is pointed out that one of these carts at a station enables

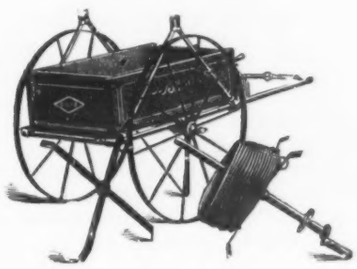


*Fig. 2.—Showing the Bearing for Reel.*

the station electrician to go immediately when a breakdown is reported, instead of being obliged to wait until some conveyance can be obtained to carry the wire and tools necessary to make the repair.

## The Herrick O. K. Wire Hoops.

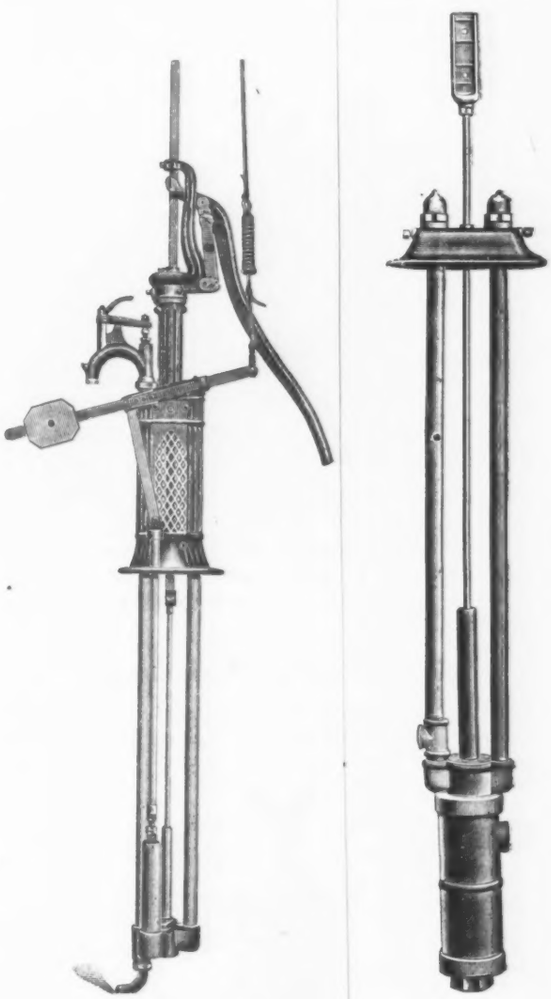
The wire hoops shown in the accompanying cuts are offered by the F. A. Herrick Company, Jackson, Mich. They are designed for use on tubs, pails and barrels.

*The Herrick O. K. Wire Hoops.*

The hoops are made of galvanized wire with a galvanized clip, so as not to rust, and are referred to as outlasting two or three common iron hoops. The wire hoops are sent from the factory with one end of the wire in the clip, as shown, and a hammer is the only tool required to put them on. They are packed in neat boxes ready to retail from, in lengths suitable for pails, tubs and barrels, one size in a box.

## Buckeye Pumps.

Mast, Foos & Co., Springfield, Ohio, have recently added to their line the pumps illustrated herewith. The Buckeye regulating pump with vertical three-way is shown in Fig. 1 and the Buckeye siphon pump in Fig. 2. The regulating pump has the regulating cylinder attached to the yoke of the pump. When the tank is full or nearly full the float closes the valve in the tank, which produces a back pressure in the regulating cylinder, causing the plunger to rise in the cylinder, which in turn raises the lever which is attached to the weight. The pull out wire of the wind mill being attached opposite the weighted end of the lever, the wind mill is immediately thrown out of the wind. The three-way



*No. 1.* *No. 2.*

*Buckeye Pumps.*

cock is made regularly with small brass tube, but can be furnished with stuffing box when so ordered.

The siphon pump is so constructed that it is supported by the base casting on the platform of the well, not requiring, it is explained, that the walls of the well be disturbed to place supporting timbers. The pipes extending from the base of the casting to the cylinder of the pump not only support the cylinder, but form air chambers, which, it is pointed out, are essential to the perfect action of this class of force pumps. The base plate also forms a guide for the pump rod. The working barrel of the pump is made of brass, and the check valve and plunger are submerged in the water contained between the outside shell and the brass cylinder.

## The New Era Cork Puller.

The C. T. Williamson Wire Novelty Company, Newark, N. J., are offering the cork pullers shown herewith, No. 2 in Fig. 1 being provided with a bottle holder.

No. 1. No. 2.

*Fig. 1.—The New Era Cork Pullers.*

They are of the counter style, and one up and down movement of the handle draws the cork from the bottle, it is remarked, without spilling the contents or chipping or breaking the glass and without leaving pieces of cork in the bottle. It is stated that the spring catch, shown clutching the nut in Fig. 2, makes a direct

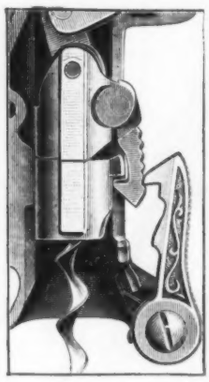
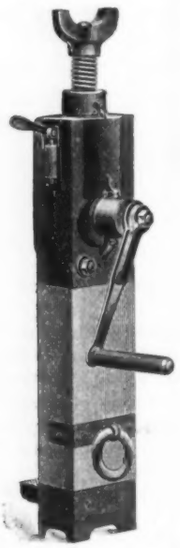


*Fig. 2.—The Spring Catch of New Era Cork Pullers.*

draw, insuring the drawing of all corks with equal ease, whether hard knotty corks or soft ones. In gross lots the company furnish the pullers with name plates for advertising purposes.

## The Time Saving Stone Jack.

The Time Saving stone jack is claimed to be a radical departure from previous patterns, combining a number

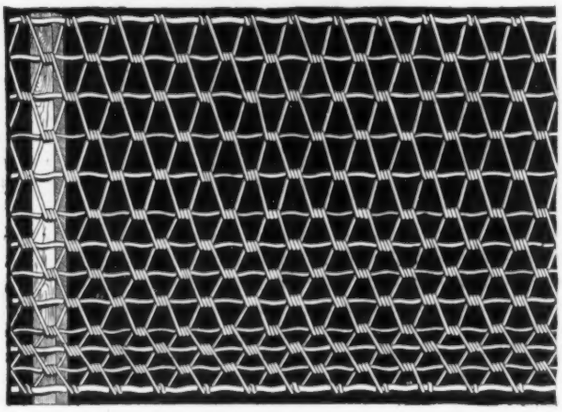


*The Time Saving Stone Jack.*

of improvements. It can be raised and lowered to the hight desired quickly, thus saving the tedious operation of turning the crank until the desired position is reached. Instead of a rack, a screw with square thread is used. Blocking is also unnecessary, as the screw will remain in any position in which it is placed. The screw is provided with top and bottom shoes and crank. It is manufactured by Arthur J. O'Leary, Chicago, Ill.

## Graduated Diamond Mesh Fence.

The graduated mesh fence shown herewith is offered by the Kokomo Steel & Wire Company, Kokomo, Ind. The parallel wires are spaced so that the distance between wires at the bottom of the fence is 3 inches, the

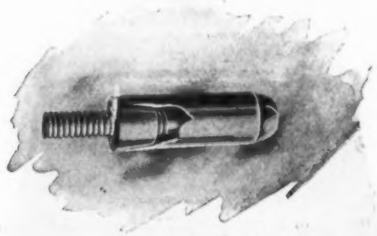


*Graduated Diamond Mesh Fence.*

next spacing 4½ inches and the last spacing 6 inches between the parallel line wires. The diamond mesh is referred to as making a rigid, strong fencing, and one that is a support to itself in every direction. Nothing but the very best grade of steel wire is used in the construction, the manufacturers explain, while the wire is corrugated, to provide for contraction and expansion. It is pointed out that the mesh wire is heavy and strong, and that, together with the tensile strength of the line wires, in the opinion of the manufacturers, makes it one of the strongest fences. It is made in various hights, from hog fence 27 inches high up to 57 inches in hight. Strength, durability and beauty are the leading features claimed for it.

## Expansion Bolts.

McCabe Hanger Mfg. Company, 532-542 West Twenty-second street, New York, have put on the market a form of expansion bolts in brass, as here illustrated, designed particularly for plumbers. It is intended for fastening marble, granite, bronze or any material in position that would be discolored by using an iron bolt. The nut and shell is brass, the screw or bolt being of the same material, nickeled. They can be sup-



*Expansion Bolt for Marble and Plumbers' Trade.*

plied in various forms, such as square, round or flat countersunk heads, in the following diameters—viz.: 3-16, ¼, 5-16 and ⅜ inch, the lengths of each diameter being 1, 1¼, 1½, 1¾, 2, 2½ and 3 inches. They can also furnish this style of expansion bolt with brass bolt and nut and iron shell at a lower cost, for such purposes as a shell of that material is adapted to.

# Current Hardware Prices.

## REVISED JUNE 24, 1902.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓&10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Cut Prices.**—*In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.*

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued April, 1902), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters' Blind—

Domestic, ₱ doz. $3.00.....33⅓&5
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

### Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....25&5%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anvils—American—

Armand Hammer, Wrought ₱ lb 8¼@8¾c
Buel Patent Trenton.....₱ lb 9½@9¾c
Eagle Anvils.....₱ lb 7¼@7¾c
Hay-Budden, Wrought.....9c@9¼c
Horseshoe brand, Wrought.....9c@9¼c

### Anvil, Vise and Drill—

Millers Falls Co., $18.00.....50&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—

Hull Bros. Co.:
Lots of 1 doz.....25%
Smaller Lots.....20%
Lots of 3 doz.....30%

### Augers and Bits—

*Com. Double Spur.....70@70&10%*
*Boring Machine Augers...70@70&10%*
*Car Bits, 12-in. twist.....60@60&10%*
*Jennings' Pattern Auger Bits.....50&10&5@60%*
Ford's Auger and Car Bits.....40&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. K. Jennings' list 25&10%
No. 30. K. Jennings' List. 40&7½&10%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15&10%
Mayhew's Countersink Bits.....45%
Millers' Falls.....50&10&7½%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....50&10%
Snell's Car Bits, 12-in. twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

### Bit Stock Drills—

*Standard List.....65@65&5%*

### Expansive Bits—

Clark's small, $18; large, $36.....50&10%
Lavigne's Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....50&10%
C. E. Jennings & Co., Steer's Pat..25&10%
Swan's.....60%

### Gimlet Bits—

*Common Double Cut..gro. $2.35@2.75*
*German Pattern.....gro. $4.0)@4.75*

### Hollow Augers—

*Bonney Pattern, per doz. $11.00@11.50*
Ames.....25&10%
New Paten%.....25&10%
Universal.....20%
Wood's Universal.....25%

### Ship Augers and Bits—

Ford's.....40%
Snell's.....40%
C. E. Jennings & Co.:
L'Hommedieu's.....15&10%
Watrous'.....33⅓&10%

### Awl Hafts, See *Hafts, Awl.*

### Awls—

*Brad Awls:*
*Handled.....gro. $2.75@3.10*
*Unhandled, Shouldered..gro.63@66c*
*Unhandled, Patent.....gro. 66@70c*
*Peg Awls:*
*Unhandled, Patent....gro. 31@34c*
*Unhandled, Shouldered..gro.65@70c*
*Scratch Awls:*
*Handled, Common..gro. $3.50@4.00*
*Handled, Socket..gro. $11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—

*First Quality, factory brands....$6.00*
*First Quality, jobbers' brands....$5.75*
*Second Quality.....$5.00@5.25*

### Axle Grease—See *Grease, Axle.*

### Axles—

*Iron or Steel.*
*Concord, Loose Collar....4½@5c*
*Concord, Solid Collar....4¾@5½c*
*No. 1 Common.....3½@3¾c*
*No. 1 Com., New Style..3¼@4 c*
*No. 2. Solid Collar.....4¼@4½c*
*Nos. 11 to 14.....70@70&10%*
*Nos. 15 to 18.....75@75&10%*
*Nos. 19 to 22.....75@75&10%*
*2% cash 10 days.*

### Boxes, Axle—

*Common and Concord, not turned.. lb. 4½@4¾c*
*Common and Concord, turned..... lb. 4¾@5c*
*Half Patent.....lb. 8@9c*

### Balances— Sash—

Caldwell new list.....50%
Pullman's.....60%

### Spring—

*Spring Balances.....50&10@60%*
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%
Pelouze.....50%

### Barb Wire—See *Wire, Barb.*

### Bars— Crow—

*Steel Crowbars, 10 to 40 lb., per lb.. 2¾@3c*

### Beams, Scale—

*Scale Beams, List Jan. 12, '82.40&10%*
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

### Beaters— Egg—

| Standard Co.: | ₱ gro. |
|---|---|
| No. 0 Rapid | $4.50 |
| No. 10 Dover Family Size | $8.00 |
| No. 15 Dover Hotel Size | $15.00 |
| Rival | $9.00 |

Taplin Mfg. Co.: ₱ gro.
No. 60 Improved Dover.....$6.50
No. 75 Improved Dover.....$7.50
No. 75-2 Imp'd Dover, Tin'd.....$9.00
No. 100 Improved Dover.....$8.00
No. 102 Improved Dover, Tin'd...$9.50
No. 150 Improved Dover, Hotel..$15.00
No. 152 Imp'd Dover, Hotel, T'd..$17.00
Lyon's, Standard size.....₱ doz. $1.75
Wonder (S. S. & Co.).....₱ gro. $7.50

### Bellows—

*Blacksmith, Standard List.70@70&10%*

### Blacksmiths'—

*Net Prices.*

| *Inch..* | 30 | 32 | 34 | 36 | 38 | 40 |
|---|---|---|---|---|---|---|
| *Each..* | $3.50 | 3.75 | 4.25 | 4.80 | 5.35 | 6.15 |

*Extra Length:*
*Each..$4.00 4.55 5.10 5.60 6.40 7.50*

### Molders—

| *Inch..* | 9 | 10 | 11 | 12 | 14 | 16 |
|---|---|---|---|---|---|---|
| *Doz...* | $6.75 | 7.25 | 8.50 | 9.50 | 12.00 | 14.50 |

### Hand—

| *Inch...* | 6 | 7 | 8 | 9 | 10 | 12 |
|---|---|---|---|---|---|---|
| *Doz...* | $3.75 | 4.25 | 4.50 | 5.00 | 5.7 | 6.75 |

### Bells— Cow—

*Ordinary goods.....75&5@75&10%*
*High grade.....70@70&10%*
Jersey.....75&10%
Texas Star.....50%

### Door—

Abbe's Gong.....45%
Barton Gong.....55%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....60&10&10%
Yankee Gong.....35%

### Hand—

*Hand Bells, Polished....60&5@60&10%*
*White Metal.....55@55&10%*
*Nickel Plated.....50@50&10%*
*Swiss.....60@60&7½%*
Silver Chime.....33⅓@33⅓&10%

### Miscellaneous—

*Farm Bells.....lb. 2@2¼c*
*Steel Alloy Church and School.....60%*
National Bell Foundry Co.:
Superior Cast Steel Church and School Bells.....50&10&5@60%
Wilmot & Hobbs Mfg. Co., Gongs.....70%
Trip Gong Bells.....55&10@10%

### Belting— Rubber—

*Agricultural (Low Grade).75&10@30%*
*Common Standard.....75@75&10%*
*Standard.....70@70&10%*
*Extra.....60&10&5%*
*High Grade.....50&10@50&10&5%*
Boston Belting Co.:
Seamless Stitched, Imperial.....45&5%
Boston.....50&5%
Niagara.....60&5%

### Leather—

*Extra Heavy, Short Lap...50&10@60%*
*Regular Short Lap.....60@60&5%*
*Standard.....60&10@65&10%*
*Light Standard.....65@70%*
*Leather Lacing.....60&10%*

### Cotton—

Rossendale-Reddaway B. & H. Co.:
Sphinx Brand.....60&10%
Durable Brand.....70%

### Bench Stops—See *Stops, Bench*

### Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....40%
Green River Tire Benders and Upsetters.....20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $3.75; No. 2, $6.50; No. 3, $9.50; No. 4, $14.75; No. 5, $18.75.

### Bicycle Goods—

John S. Leng's Son's 1902 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

### Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Bit Holders—See *Holders.*

### Blind Adjusters—See *Adjusters, Blind.*

### Blind Fasteners—See *Fasteners, Blind.*

### Blind Staples—See *Staples, Blind.*

### Blocks— Tackle—

*Common Wooden.....70&10@75%*
Cleveland Steel.....60@60&10%
Hollow Steel Blocks, with Ford's Patent Sheaves.....50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

### Boards Stove—

*Zinc, Crystal, &c.....40@40&10%*

### Bolts—

### Carriage, Machine &c.—

*Common, list Feb. 1, '02.....60&5@...%*
*Norway Iron. $3.00, list Jan. 1, '98 80@80&5%*
*Phila. Eagle, $3.00 list May 24, '99.... 80@80&5%*
*Bolt Ends, list Feb. 14, '95.65&2½@...%*
*Machine, list Oct. 1, '99..... 65@...%*
*Machine with C & T. Nuts..... 60&2½@...%*

NOTE.—*Jobbers are in many cases underselling the manufacturers.*

### Door and Shutter—

*Cast Iron Barrel, Round Brass Knob:*

| *Inch.....* | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| *Per doz...* | $0.26 | .30 | .39 | .47 | .65 |

*Cast Iron Spring Foot:*

| *Inch.....* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.....* | $1.00 | 1.35 | 1.75 |

*Cast Iron Chain, Flat, Japanned:*

| *Inch.....* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.....* | $0.75 | 1.05 | 1.30 |

*Cast Iron Shutter, Brass Knobs:*

| *Inch.....* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz.....* | $0.57 | .80 | 1.00 |

*Wrought Barrel Brass Knob:*

| *Inch.....* | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| *Per doz ...* | $0.44 | .50 | .61 | .70 | 1.28 |

*Wrought Barrel.....75&5@75&10&5%*
*Wrought " Bronzed.50&5@50&10%*
*Wrought Flush, B. K..50&10@60&10%*
*Wrought Shutter...50&10&10@60&5%*
*Wrought Square Neck.....50@50&10%*
*Wrought Sunk.....50@50&10%*
Ives' Patent Door.....60%

### Stove and Plow—

*Plow.....60@...%*
*Stove.....77½%*

### Tire—

*Common.....77½%*
*Norway Iron.....80@80&5%*
American Screw Company:
Norway Phila., list Oct. 16, '34....82½%
Eagle Phila., list Oct. 16, '84.....85%
Bay State, list Dec. 28, '99.....77½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84..82½%
Eagle Phila., list Oct. 16, '84.....85%
Eclipse, list Dec. 28, '99.....77½%
Port Chester Bolt & Nut Company
Empire, list Dec. 28, '99.....77½%
Keystone Phila. list Oct. '84.....85%
Norway Phila., list Oct. '84.....82½%
Upson Nut Co.:
Tire Bolts.....77½%

### Borers, Tap—

*Borers Tap, Ring, with Handle:*

| *Inch.....* | 1¼ | 1½ | 1¾ | 2 |
|---|---|---|---|---|
| *Per doz...* | $4.30 | 5.00 | 5.75 | 7.25 |
| *Inch.....* | | 2¼ | | 2½ |
| *Per Doz.....* | | $8.65 | | 11.50 |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

### Boring Machines—See *Machines, Boring.*

### Boxes, Mitre—

C. E. Jennings & Co.....25&10%
Langdon.....15&10%
Seavey's, per doz., $30.....40%

### Braces—

NOTE.—*Most Braces are sold at net prices.*
*Common Ball, American...$1.15@1.25*
Barber's.....50&10&10@50&10%
Fray's Genuine Spofford s.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....60%
C. E. Jennings & Co.....50&5&10%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Patent..50%
Millers Falls Drill Braces.....25&10%
P. S. & W. Co. Peck's Patent60&10@65%

### Brackets—

*Wrought Steel.....75@5@75&10%*
Bradley's Wire Shelf:
Full cases.....80&10%
Broken cases.....80%
Griffin's Pressed Steel.....75%
Griffin's Folding Brackets.....70&10%

### Bright Wire Goods—See *Wire and Wire Goods.*

### Broilers—

Wire Goods Co.....75@75&10%

### Buckets, Well and Fire—See *Pails*

### Bucks, Saw—

Hoosier.....₱ gro. $36.00

### Bull Rings—See *Rings, Bull.*

### Butts— Brass—

*Wrought list Sept., '96.....30@30@5%*
Cast Brass, Tiebout's.....50%

### Cast Iron—

*Fast Joint, Broad.....50@50&10%*
*Fast Joint, Narrow.....50@50&10%*
*Loose Joint.....70@5@70&10%*
*Loose Pin.....70@5@70&10%*
*Mayer's Hinges.....70&5@70&10%*
*Parliament Butts.....70@5@70&10%*

### Wrought Steel—

*Table and Back Flaps.....60%*
*Narrow and Broad.....50%*
*Inside Blind.....66&10%*
*Loose Pin.....60&10%*
*Loose Pin, Ball and Steeple Tip.....75%*
*Japanned, Ball Tip Butts...60%*
*Bronzed Wrt. Nar. and Inside Blind Butts.....45@30@45&25%*

*Extra 85@ 2½&10%*

## Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

### Calipers—See *Compasses.*

### Calks. Toe and Heel—

*Blunt, 1 prong.....per lb..4@4¼c*
*Sharp, 1 prong.....per lb. 4¼@4½c*
Perkins' Blunt Toe.....₱ lb 3½c
Perkins' Sharp Toe.....₱ lb 4 c

### Can Openers—See *Openers, Can*

### Cans, Milk—

| | 5 | 8 | 10 gal. | |
|---|---|---|---|---|
| Illinois Pattern. | $1 75 | 2.10 | 2.25 | each. |
| Iowa Pattern... | .... | 2.40 | 2.60 | each. |
| Buffalo Pattern. | .... | 2.30 | 2.50 | each. |
| | 20 | 30 | 40 | qts. |
| New York Patt'rn | 3.00 | 3.25 | 3.40 | each. |
| Baltimore Patt'rn | 2.50 | 2.85 | 3.10 | each. |

### Cans, Oil—

Buffalo Family Oil Cans:

| 3 | 5 | 10 gal. |
|---|---|---|
| $48.00 | 60.00 | 108 gro |

### Caps—Percussion—

*Eley's E. B.....60c*
*G. D.....per M 32@34c*
*F. L.....per M 42@...c*
*G. E.....per M 47@50c*
*Musket.....per M 62@...c*

### Primers—

*Berdan Primers, $1.00 per M.....5%*
*B. L. Caps (Sturtevant Shells) $1.00 per M.....5%*
*All other primers per M..$1.22@$1.27*

### Carpet Stretchers—See *Stretchers, Carpet.*

### Cartridges—

*Blank Cartridges:*
32 C. F., $5.50 ..... 10c&5%
38 C. F., $7.00 ..... 10c&5%
22 cal. Rim, $1.50 ..... 10c&5%
32 cal. Rim, $2.75 ..... 10c&5%
B. B. Caps, Con., Ball Swgd ..... $1.90
B. B. Caps, Round Ball ..... $1.40
Central Fire ..... 25%
Target and Sporting Rifle ..... 15c&5%
Primed Shells and Bullets ..... 15c&10%
Rim Fire Sporting ..... 50%
Rim Fire, Military ..... 15c&5%

### Casters—

Bed ..... 70c&10@70c&10c&5%
Plate ..... 75c&10@75c&10c&5%
Philadelphia ..... 75c&10@75c&10c&5%
Boss ..... 70&10%
Boss Anti-Friction ..... 70&10%
Martin's Patent (Phoenix) ..... 45%
Payson's Anti-Friction ..... 70&10&10%
Standard Ball Bearing ..... 45%
Tucker's Patent low list ..... 30%

### Cattle Leaders—

See *Leaders, Cattle.*

### Chain, Coil—

*American Coil, Jobbers' Shipments:*

| 3/16 | 1/4 | 5-16 | 3/8 | 7-16 | 1/2 | 9-16 |
|---|---|---|---|---|---|---|
| 8.70 | 6.35 | 5.30 | 4.50 | 4.30 | 4.20 | 4.25 |
| 5/8 | 3/4 | 7/8 | 1 to 1¼ inch. | | | |
| 4.10 | 4.15 | 4.15 | 4.15 | per 100 lb. | | |

*German Coil* ..... 60&10c&10%

### Halters and Ties—

*Halter Chains* ..... 60c&10@60c&10c&10%
*German Halter Chain, list July 24, '97* ..... 60c&10@60c&10c&10c&5%
*Cow Ties* ..... 60@60c&5%

### Trace, Wagon, &c.—

*Traces, Western Standard: 100 pair*
6½—6-3, *Straight, with ring* ..... $30.00
6½—6-2, *Straight, with ring* ..... $31.00
5½—8-2, *Straight, with ring* ..... $35.00
6½—10-2, *Straight, with ring* ..... $38.00
*Add 2c per pair for Hooks.*
*Twist Traces 2¢ per pair higher than Straight Link.*
*Trace, Wagon and Fancy Chains* ..... 50c&10@50c&10c&5%

### Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron* ..... 60c&10@60c&10c&10%
*Brass* ..... 60c&10@60c&10c&10%
*Safety Chain* ..... 70c&5@70c&10%
*Gal. Pump Chain* ..... lb. 4¾@4¾c
Covert Mfg. Co.:
Breast ..... 35&2%
Halter ..... 35&2%
Heel ..... 35&2%
Rein ..... 35&2%
Stallion ..... 35&2%
Covert Sad. Works:
Breast ..... 70%
Halter ..... 70%
Solid Back ..... 70%
Rein ..... 70%
Oneida Community:
Am. Coil and Halters ..... 40@45&5%
Am. Cow Ties ..... 45@50%
Eureka Coil and Halter ..... 45@50&5%
Niagara Coil and Halter ..... 45@50&5%
Niagara Cow Ties ..... 45&5@50&10&5%
Wire Dog Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain ..... 70&10%
Universal Dbl-Jointed Chain ..... 50%

### Chalk—(From Jobbers.)

*Carpenters' Blue* ..... gro. 42@45c
*Carpenters', Red* ..... gro. 37@40c
*Carpenters', White* ..... gro. 33@35c
*See also Crayons.*

### Chalk Lines—See *Lines.*

### Checks, Door—

Bardsley's ..... 40&10%
Columbia ..... 50&10%
Eclipse ..... 60%

### Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools ..... 55%
Youths' Chests, with Tools ..... 40%
Gentlemens' Chests, with Tools ..... 30%
Farmers', Carpenters', etc, Chests, with Tools ..... 30%
Machinists' and Pipe Fitters' Chests, Empty ..... 50%
C. E. Jennings & Co.'s Machinists' Tool Chests ..... 33⅓&10%

### Chisels—Socket Framing and Firmer

*Standard List* ..... 70@70c&10%
Buck Bros ..... 30%
Charles Buck ..... 30%
C. E. Jennings & Co. Socket Firmer No. 10 ..... 60&10%
C. E. Jennings & Co. Socket Framing No. 15 ..... 60&10%
Swan's ..... 70%
L. & L. J. White ..... 30@30&5%

### Tanged—

*Tanged Firmers* ..... 40c&5@40&10%
Buck Bros ..... 30%
Charles Buck ..... 30%
C. E. Jennings & Co. Nos. 191, 181 ..... 16⅔&10%
L. & I. J. White, Tanged ..... 25&5%

### Cold—

*Cold Chisels, good quality, lb. 13@15c*
*Cold Chisels, fair quality, lb. 11@12c*
*Cold Chisels, ordinary* ..... lb. 8@9c

### Chucks—

Beach Pat., each $8.00 ..... 30%
Massey's Planer and Milling ..... 15@20%
Pratt's Positive Drive ..... 25%
Empire ..... 25%
Blacksmiths' ..... 25%
Skinner Patent Chucks:
Combination Lathe Chucks ..... 40%
Drill Chucks, Patent and Standard ..... 30%
Drill Chucks, New Model ..... 25%
Independent Lathe Chucks ..... 40%
Improved Planer Chucks ..... 25%
Universal Lathe Chucks ..... 40%
Face Plate Jaws ..... 40%
Standard Tool Co.:
Improved Drill Chuck ..... 45%
Union Mfg. Co.:
Combination ..... 40%
Car Drill ..... 30%
Geared Scroll ..... 30%
Independent ..... 40%
Union Drill ..... 30%
Universal ..... 40%
Face Plate Jaws ..... 35%

### Clamps—

Adjustable, Hammers' ..... 20@20&5%
Cabinet, Sargent's ..... 50&10%
Carriage Makers', P., S. & W. Co. ..... 50%
Carriage Makers' Sargent's ..... 60%
Besty, Parallel ..... 33⅓&10%
Lineman's, Utica Drop Forge & Tool Co ..... 40%
Saw Clamps, see *Vises, Saw Filers'.*

### Cleaners Sidewalk—

Star Socket, All Steel ..... ₱ doz. $4.00 net
Star Shank, All Steel ..... ₱ doz. $3.75 net
W. & C. Snank, All steel, 7½ in. ₱ doz., $3.05; 8 in., $3.10; 8½ in., $3.25.

### Cleavers, Butchers'—

Foster Bros ..... 30%
New Haven Edge Tool Co.'s ..... 45%
Fayette R. Plumb ..... 33⅓&33⅓&10%
P., S & W ..... 50@50&5%
L. & I. J. White ..... 25%

### Clippers—

Chicago Flexible Shaft Company
Handy Toilet ..... ₱ doz. $7.20
Mascotte Toilet ..... ₱ doz. $8.40
Monitor Toilet ..... ₱ doz. $9.00
Stewart's Patent ..... ₱ doz. $10.00

### Clips, Axle—

*Eagle and Superior ¼ and 5-16 inch* ..... 70c&10%
*Norway, ¼ and 5-16 inch* ..... 70@70c&10%

### Cloth and Netting, Wire—See *Wire, &c.*

### Cocks, Brass—

*Hardware' list:*
*Compression and Plain Bibbs* ..... 65c&5@65c&10%
*Globe, Kerosene, Racking, &c., Cocks* ..... 65c&10@70%

### Coffee Mills—See *Mills, Coffee.*

### Collars, Dog—

Brass, Pope & Stevens' list ..... 40%
Embossed, Gilt, Pope & Stevens' list ..... 30&10%
Leather Pope & Stevens' list ..... 40%

### Combs, Mane and Tail—

Covert's Saddlery Works ..... 60&10%

### Compasses Dividers, &c.

*Ordinary Goods* ..... 75@75c&5%
Bemis & Call Hdw. & Tool Co.:
Dividers ..... 65%
Calipers, Call's Patent Inside ..... 55%
Calipers, Double ..... 65%
Calipers, Inside or Outside ..... 65%
Calipers, Wing ..... 60%
Compasses ..... 50%
J. Stevens A. & T. Co ..... 25&10%

### Compressors, Corn Shock—

J. B. Hughes' ₱ doz ..... $2.50

### Conductor Pipe, Galva.—

*L. C. L. to Dealers:*

| *Territory.* | *Not nested.* | *Nested.* |
|---|---|---|
| *Eastern* | 70c&2½c&10% | 70c&5c&10% |
| *Central* | 65c&10c&10% | 70c&10% |
| *Southern* | 65c&10% | 65c&2½c&10% |
| *S. Western* | 60c&12½c&10% | 60c&15c&10% |

*Terms, 2% for cash.*
*Jobbers receive extra 12½c&2½ on carloads loose, and extra 12½ on carloads crated.*
See also *Eave Troughs.*

### Coolers, Water—

| Gal. each | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Labrador | $1.20 | $1.50 | $1.80 | $2.10 | 2.20 |
| Gal. | 3 | 4 | 5 | 6 | 8 |
| Iceland, ea. | $1.80 | $2.10 | $2.40 | $3.00 | |
| Gal. | 2 | 3 | 4 | 6 | 8 |
| Galv. Lined Ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

25%

| Ga.v. Lined side handles Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each. | $1.95 | $2.15 | $2.40 | $3.30 | $4.15..25% |

### Coopers' Tools—See *Tools, Coopers'.*

### Cord—Sash—

*Braided, Drab* ..... lb. 25c
*Braided, White, Com* ..... lb. 17½@18c
*Cable Laid Italian* ..... lb. A, 18c; B, 16c
*Common India* ..... lb 9 @9½c
*Cotton Sash Cord, Twisted* ..... 12@16c
*Patent Russia* ..... lb. 12½@13c
*Cable Laid Russia* ..... lb. 13½@14c
*India Hemp, Braided* ..... lb 14@15c
*India Hemp, Twisted* ..... lb. 10@12c
*Patent India, Twisted* ..... lb. 10@12c
Pearl Braided, cotton ..... ₱ lb 18¢
Massachusetts, White ..... ₱ lb 22½¢
Massachusetts, Drab ..... ₱ lb 26½¢
Eddystone Braided Cotton ..... ₱ lb 19¢
Harmony Cable Laid Italian ..... ₱ lb 18¢
Osawan Mills:
Crown, Solid Braided White ..... ₱ lb 22¢
Braided, Giant, White ..... ₱ lb 20¢
Peerless:
Cable Laid Italian ..... 16¢
Cable Laid Russian ..... 14¢
Cable Laid India ..... 12¢
Braided India ..... 18¢
Phoenix, White ..... 19¢
Samson, Nos. 7 to 12:
Braided, Drab Cotton ..... ₱ lb 32½¢
Braided, Italian Hemp ..... ₱ lb 32½¢
Braided, Linen ..... ₱ lb 49¢
Braided, White Cotton, Spot ₱ lb 28½¢
No. 6 cords, 1¢ extra.
Silver Lake:
A quality, Drab, 40¢ ..... 15%
A quality, White, 35¢ ..... 15%
B quality, Drab, 35¢ ..... 15%
B quality, White, 30¢ ..... 15%
Italian Hemp, 40¢ ..... 15%
Linen, 57½¢ ..... 15%

### Wire, Picture—

*List Oct. '00, 85c&10c&10@85c&10c&10c&10%*
*Note.—There is a good deal of confusion in lists, some using old list and others the above list.*

### Corn Knives and Cutters—See *Knives, Corn.*

### Corn Planters—See *Planters, Corn—*

### Crackers, Nut—

Little Giant ..... ₱ gr. $24.00

### Cradles—

*Grain* ..... 50%

### Crayons—

*White Round Crayons, gross* ..... 5½@6c
*Cases, 100 gro., $4.50, at factory.*
D. M. Steward Mfg. Co.
Metal Workers' Crayons gr. $2.50
Soapstone Pencils, round, flat or square ..... gr. $1.50
Rolling Mill Crayons ..... gr. $2.50
Railroad Crayons (composition) gr. $2.00
Case lots 20%
See also *Chalk.*

### Creamery Pails—See *Pails, Creamery.*

### Crooks, Shepherds'—

Fort Madison, Heavy ..... ₱ doz. $7.00
Fort Madison, Light ..... ₱ doz. $6.50

### Crow Bars—See *Bars, Crow.*

### Cultivators—

Victor Garden ..... ₱ doz. $10.00

### Cutlery Table—

International Silver Company:
No. 12 Medium Knives, 1847 ..... ₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor ..... ₱ doz. $3.00
Wm. Rogers & Son ..... ₱ doz. $2.50
Simeon L. & Geo H. Rogers Company:
12 dwt. Medium Knives ..... ₱ doz. $3.00
No. 77 Medium Knives ..... ₱ doz. $2.50

### Cutters—Glass—

H. H. Mayhew Co ..... 40%
Smith & Hemenway Co ..... 50%

### Meat—

*Hale's, Nos. 11 & 111 12 & 112 13 & 113*

| *Per doz* | *$9.50* | *12.50* | *16.00* |
|---|---|---|---|

*American* ..... 30%

| Nos. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $25 | $50 | $80 |

Connecticut ..... 50%

| No. | 20 | 40 | 60 | 8 | 10 | 12 |
|---|---|---|---|---|---|---|
| Each | $1.75 | 2.00 | 2.25 | 3.00 | 3.00 | 4.00 |

Enterprise ..... 25@25&7½%

| Nos. | 5 | 10 | 12 | 22 | 32 |
|---|---|---|---|---|---|
| Each | $2 | $3 | $2.50 | $4 | $6 |

Dixon's, ₱ doz ..... 30&10@40%

| Nos. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $14.00 | $17.00 | $19.00 | $30.00 |

Home No. 1, ₱ doz. $22.75 ..... 50&10%
Little Giant, ₱ doz ..... 35&2½@40%

| Nos. | 305 | 310 | 313 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $71.00 | $68.00 |

Sterling ..... 33⅓&5%

| Nos | 1 | 2 |
|---|---|---|
| Each | $2.00 | $2.50 |

New Triumph No. 605, ₱ doz. 24.00 ..... 30&10&10%
Woodruff's, ₱ doz ..... 30&10@40%

| Nos | 100 | 150 |
|---|---|---|
| | $15.00 | $18.00 |

Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers ..... 25@30%

### Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c ..... 40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9 ..... 55%
Kraut Cutters 36 x 12, 40 x 12 ..... 40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters ..... 40%
Slaw Cutters, 1 Knife, ₱ gr. ..... $18@$20
Slaw Cutters, 2 Knife, ₱ gr. ..... $22@$30

### Tobacco—

*All Iron, Cheap* ..... doz. $1.25@$1.50
Enterprise ..... 25&10%
National, ₱ doz. $21.00 ..... 40%
Sargent's, ₱ doz., No. 2 ..... 60%
Sargent's No 12 and 21 ..... 50&10%

### Washer—

Appleton's, ₱ doz. $16.00 ..... 50&10%
Bonney's ..... 40%

## Diggers, Post Hole, &c.—

Dalbey Post Hole Anger ... per doz., $9.00
Iwan's Improved Post Hole Auger ..... 40%
Iwan's Perfection Post Hole Digger, ₱ doz. $9.00
Kohler's Universal ..... ₱ doz. $14.00
Kohler's Little Giant ..... ₱ doz. $14.00
Kohler's Hercules ..... ₱ doz. $12.00
Kohler's Invincible ..... ₱ doz. $10 00
Kohler's Rival ..... ₱ doz. $9.00
Kohler's Pioneer ..... ₱ doz. $9.00
Never-Break Post Hole Diggers, ₱ doz. $24.00 ..... 60%
Samson, ₱ doz. $34.00 ..... 25%

### Dividers—See *Compasses.*

### Dog Collars—See *Collars, Dog.*

### Door Checks—See *Checks, Door.*

### Door Springs—See *Springs, Door.*

### Doors, Screen—

Porter's Plain, No. 6 ..... ₱ doz. $6 50
Porter's Ornamental, No. 70. ₱ doz. $10.00

### Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $15; No. 3, $13; No. 4, $18.

### Drawing Knives—See *Knives, Drawing.*

### Drills and Drill Stocks—

*Common Blacksmiths' Drill ... each $1.50@$1.75*
*Blacksmiths' Self-feeding ..... each $3.75@4.00*
Breast, Millers Falls ..... 15c&10%
Breast, P., S. & W ..... 40c&5%
Goodell Automatic Drills ..... 40c&5@40c&10%
Johnson's Automatic Drills Nos. 2 and 3 ..... 16⅔&5c&10%
Johnson's Drill Points ..... 16⅔&5c&10%
Millers Falls Automatic Drills ..... 33⅓&10%
Ratchet, Curtis & Curtis ..... 25%
Ratchet, Parker's ..... 40%
Ratchet, Weston's ..... 20@25%
Ratchet, Whitney's, P.S. & W ..... 50%
Whitney's Hand Drill, No. 1, $10.00 ..... Adjustable, No. 10, $12.00 ..... 33⅓%

### Twist Drills—

*Standard List* ..... 60c&10@60c&10c&10%

### Drill Bits or Bit Stock Drills—See *Augers and Bits.*

### Drill Chucks—See *Chucks.*

### Dripping Pans—See *Pans, Dripping.*

### Drivers, Screw—

*Screw Driver Bits ... per doz. 45@70c*
Balsey's Screw Holder and Driver, ₱ doz. 2¼-inch, $6; 4-in., $7.50 6-in., $9 ..... 40%
Buck Bros ..... 30%
Buck Bros' Screw Driver Bits ..... 30%
Champion ..... 50%
Fray's Hol. Hdle Sets, No. 3, $12.00 ..... 50%
Gay's Double Action Ratchet ..... 35%
Goodell's Automatic ..... 50&10&10@50&10&10&5%
Mayhew's Black Handle ..... 50%
Mayhew's Monarch ..... 40&10%
Millers Falls, Nos. 2) and 21 ..... 25&10%
Millers Falls, Nos. 11, 12, 41, 42 ..... 15&10%
New England Specialty Co ..... 50&10%
Sargent & Co.'s:
Nos. 1, 50, 55 and 60 ..... 60%
Nos. 20 and 40 ..... 70%
Smith & Hemenway Co ..... 40&5%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles ..... 70@70&10&10%
No. 86 ..... 70@70&10&10%
Swan's:
Nos. 65 to 68 ..... 50%
No. 40 ..... 40&10%
Nos. 25, 35 and 45 ..... 30&10&10%

### Eave Trough Galvanized

*Territory.* *L. C. L.*
*Eastern* ..... 75c&c10105 } Carloads
*Central* ..... 75c&7½c&10% } extra
*Southern* ..... 70c&7½c&10% } 12½%
*S. Western* ..... 70c&10c&10% }
*Terms, 2% for cash.*
See also *Conductor Pipe and Elbows.*

### Egg Beaters—See *Beaters, Egg*

### Egg Openers—See *Openers, Egg.*

### Elbows and Shoes—

*Factory shipments* ..... 60%
Perfect Elbows (S. S. & Co.) ..... 30%

### Emery, Turkish—

| | 4 to 46 | 5 to 150 | Flour |
|---|---|---|---|
| *Kegs* ..... lb. | 5c | 5½c | 3¼c |
| ½ *Kegs* ..... lb. | 5¼c | 5¾c | 3¾c |
| *Kegs* ..... lb | 5c | 6c | |
| *10-lb cans, 10 in case* | 6¼c | 7c | 6c |
| *10-lb. cans, less than 10* | 10c | 10c | 8c |

NOTE.—*In lots 1 to 3 tons a discount of 10% is given.*

### Enameled and Tinned Ware—See *Ware, Hollow.*

### Escutcheon Pins—See *Pins, Escutcheon.*

### Extractors, Lemon Juice—See *Squeezers, Lemon.*

### Fasteners, Blind—

Zimmerman's ..... 50&10%

### Faucets—

*Cork Lined* ..... 70c&5@70c&10c&5%
*Metallic Key, Leather Lined* ..... 70@70c&10%
*Red Cedar* ..... 50@50c&10%
B. & L. B. Co.:
Metal Key ..... 60&10%
Star ..... 60%
Wedge Lock ..... 50&10%
John Sommer's Peerless Tin Key ..... 40%
John Sommer's Boss Tin Key ..... 50%
John Sommer's Victor Metal Key ..... 50&10%
John Sommer's Duplex Metal Key ..... 60%
John Sommer's Diamond Lock ..... 40%
John Sommer's I. X. L. Cork Lined ..... 50%
John Sommer's Reliable Cork Lined ..... 50&10%
John Sommer's Chicago Cork Lined ..... 60%
John Sommer's O. K. Cork Lined ..... 50%
John Sommer's No Brand, Cedar ..... 50%
John Sommer's Perfection Cedar ..... 40%
McKenna, Brass:
Burglar Proof, N. P ..... 35%
Improved, ¼ and ⅜ inch ..... 35%
Self Measuring:
Enterprise, ₱ doz. $36.00 ..... 40&10%
Lane's, ₱ doz. $36.00 ..... 40&10%
National Measuring, ₱ doz. $36.00 ..... 40%

### Felloe Plates—See *Plates, Felloe.*

### Files—Domestic—

*List revised Nov. 1, 1899.*
*Best Brands* ..... 70c&5@70c&10%
*Standard Brands* ..... 75@75c&10c&5%
*Second Quality* ..... 75c&10c10@80c&5%

### Imported—

*Stubs' Tapers, Stubs' list, July 24, '97* ..... 25%

### Fixtures, Grindstone—

*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* | *24* |
|---|---|---|---|---|---|
| *Per doz* | *$2.60* | *2.75* | *3.00* | *3 50* | *4.40* |

P., S. & W. Co ..... 30&10@40%
Reading Hardware Co ..... 60%
Sargent's ..... 60&10&10%
Stowell's Giant Grindstone Hanger ..... ₱ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy ..... 50&10&10%
Stowell's Grindstone Fixtures Light ..... 60&10%

### Fodder Squeezers—See *Compressors.*

### Forks—

*Sept. 1, 1900, list.*
*Grain or Barley Forks, 16 to 20 inches* ..... 70c&5% } Extra D/C&50&10%
*Hay, 2 tine* ..... 65% }
*Hay, 3 tine* ..... 66⅔% }
*Hay, 4 tine, Header and Barley Forks, 13 to 16 inches* ..... 66⅔% }
*Manure, 4 tine* ..... 70% }
*Manure, 5 and 6 tine* ..... 70% }
*Spading* ..... 70c&5% }
Iowa Dig-Eay Potato ..... 65%
Victor, Hay ..... 60%
Victor, Manure ..... 70%
Victor, Header ..... 60&30%
Champion, Hay ..... 66⅔%
Champion, Manure ..... 70%
Columbia, Hay ..... 66⅔&5%
Columbia, Manure ..... 70%
Columbia, Spading ..... 70%
Hawkeye Wood Barley 4 tine ₱ doz. $5.00; 6 tine, $6.00.
W. & C. Potato Digger ..... 65%
Acme Hay ..... 60&10&7½%
Acme Manure, 4 tine ..... 60&20&10%
Acme Manure, 6 tine ..... 66⅔&10&2%
Dakota Header ..... 65&15&5%
Jackson Steel Barley ..... 65&15&5%
Kansas Header ..... 66⅔%
W. & C. Favorite Wood Barley 4 tine, ₱ doz., $5.00; 6 tine, $6.00
Plated.—See *Spoons.*

### Frames—Saw—

*Red, Polished and Varnished ... doz. $1.15@$1.35*
*White* ..... doz. 75@80c

### Screens and Frames—See *Screens.*

### Freezers, Ice Cream—

| *Qts* | *2* | *3* | *4* | *6* | *8* | *10* |
|---|---|---|---|---|---|---|
| *Best* | *$1.45* | *1.65* | *1.95* | *2.40* | *3.20* | *4.20* |
| *Good* | *$1 25* | *1.40* | *1.70* | *2.15* | *2.75* | *3.75* |
| *Fair* | *$1.00* | *1.10* | *1.30* | *1.75* | *2.30* | *2.90* |

### Fruit and Jelly Presses—See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse—

| | *Per 1000 Feet.* |
|---|---|
| *Hemp Fuse* | *$2.60* |
| *Cotton Fuse* | *2.90* |
| *Single Taped Fuse* | *3.25* |
| *Double Taped Fuse* | *4.30* |
| *Triple Taped Fuse* | *5.00* |

10c&2½%

## Gates, Molasses and Oil—

Stebbins' ..... 80&10&10%

## Gauges—

*Marking, Mortise, &c.* ..... 55&10@55&10&10%

Chapin-Stephens Co., Gauges ..... 5&10@50&10@10%

Fulton's Butt Gauge ..... 35&10%

Stanley R. & L. Co.'s Butt & Rabbet Gauge ..... 20@20&10&10%

Wire, Brown & Sharpe's ..... 25%

Wire, Morse's ..... 25%

Wire P., S. & W. Co ..... 30&10%

## Gimlets— Single Cut—

*Nail, Metal, Assorted, gro. $1.50@1.60*

*Spike, Metal, Assorted gro. $2.80@3.25*

*Nail, Wood Handled, Assorted, gro. $1.75@2.00*

*Spike, Wood Handled, Assorted gro. $3.25@3.50*

## Glass, American Window

*Jobbers' List, Jan. 21, 1901.*

*From store, Single and Double..85&5%*

*F.O.B. factory, carload lots:*

*Single and Double strength..85&5%*

## Glasses Level—

Chapin-Stephens Co. ..... 60@60&10&10%

## Glue—Liquid, Fish—

*List A, Bottles or Cans, with Brush. 37½@50%*

*List B, Cans (½ pts., pts., qts) 53½@58%*

*List C, Cans (½ gal., gal.) ....25@45%*

International Glue Co. (Martin's) ..... 40&10@50%

## Glue Pots—See *Pots, Glue.*

## Grease, Axle—

*Common Grade ..... gro. $5.00@6.00*

Dixon's Everlasting ..... 10-lb pails, ea. 85¢

Dixon's Everlasting, in bxs.. ₱ doz. 1 lb $1.20; 2 lb $2.00

Snow Flake:
1 qt. cans, per doz. $2.00; 2 qt., $3.20;
1 gal. cans per doz. $6.00; 3 gal. $16.00; 5 gal. $24.00
} 10%

## Grindstones—

Bicycle Emery Grinder ..... $6.50

Bicycle Grindstones, each ..... $2.50@3.00

Pike Mfg. Co:
Improved Family Grindstones, per inch, per doz. ..... $2.00
Pike Mower Knife and Tool Grinder, each ..... $6.00
} 33⅓%

Velox Ball Bearing, mounted, Angle Iron Frames ..... each, $3.25

## Guards Snow—

Cleveland Wire Spring Co.:
Galv. Steel ₱ 1000 ..... $9.00
Copper ₱ 1000 ..... $18.00

## Gun Powder—See *Powder.*

## Hack Saws—See *Saws.*

## Hafts Awl— grò.

*Peg Patent, Leather Top ..$4.90@5.25*

*Peg Patent, Plain Top ....$3.50@3.75*

*Sewing, Brass Ferrule ....$1.50@1.60*

*Saddlers', Brass Ferrule ..$1.35@1.45*

*Peg, Common ..... $1.25@1.35*

*Brad, Common ..... $1.50@1.75*

## Halters and Ties—

Covert Mfg. Co.:
Web ..... 45&2%
Jute Rope ..... 45&2%
Sisal Rope ..... 30&2%

Covert's Saddlery Works:
Web and Leather Halters ..... 70%
Jute and Manila Rope Halters ..... 70%
Sisal Rope Halters ..... 60&20%
Jute, Manila and Cotton Rope Ties..70%
Sisal Rope Ties ..... 60&10%

## Hammers—

### Handled Hammers—

Heller's Machinists' ..... 50@50&5%

Heller's Farriers ..... 50@50&5%

Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ..... 40@40&10&10%

Peck, Stow & Wilcox ..... 50%

Fayette R. Plumb:
Plumb, A. E. Nail ..33⅓&5@33⅓&10&5%
Engineers' and B. S. Hand ..... 50&10&7½@50&10&10&7½%
Machinists' Hammers ..... 50&10@50&10&10%
Riveting and Tinners' ..... 40&7½@40&10&7½%

Sargent's C. S. New List ..... 40%

### Heavy Hammers and Sledges—

*3 lb. and under ..lb. 45c*
*3 to 5 lb. ..... lb. 36c* } 75&5@75 &10%
*Over 5 lb. ..... lb. 30c*

*Wilkinson's Smiths' ..... 9½c@10c lb.*

## Handcuffs and Leg Irons

See *Police Goods.*

## Handles—

### Agricultural Tool Handles—

*Axe, Pick, &c. ..... 50@50&10&5%*

*Hoe Rake, Fork, &c. ..... 60@60&5%*

*Shovel, &c., Wood D Handle 50&10@60%*

### Cross-Cut Saw Handles—

Atkins' ..... 40&5%

Champion ..... 45@45&10%

Disston's ..... 50%

### Mechanics' Tool Handles—

*Auger, assorted ..... gro. $2.30@$2.50*

*Brad Awl ..... gro. $1.25@$1.50*

*Chisel Handles:*
*Apple Tanged Firmer, gro. ass'd, $2.25@$2.35; large, $3.50@$3.60.*
*Hickory Tanged Firmer, gro. ass'd. $1.75@$2.20; large, $3.50@$3.70.*
*Apple Socket Firmer, gro. ass'd, $1.70@$1.85; large, $2.00@$2.25*
*Hickory Socket Firmer, gro ass'd. $1.60 @ $1.75; large, $1.75 @ $2.00*
*Hickory Socket Framing, gro. ass'd. $2.50@$2.75; large, $2.65@$2.85*

*File, assorted ..... gro. $1.60@$1.15*

*Hammer, Hatchet, Axe, &c. ..... 60%*

*Hand Saw, Varnished, doz. 70@75c*
*Not Varnished .. ..... 55@60c*

*Plane Handles:*
*Jack, doz. 35c; Jack Bolted .. 55@60c*
*Fore, doz. 35@38c; Fore, Bolted .. 70@75c*

Chapin-Stephens Co.:
Carving Tool ..... 40@4 &10&10%
Chisel ..... 65@65&10%
File and Awl ..... 65@65&10%
Saw ..... 40@40&10&10%
Screw Driver ..... 40@40&10&10%

Millers Falls Adj. and Ratchet Auger Handles ..... 15&10%

Nicholson Simplicity File Handle, ₱ gro. ..... $0.85@$1.50

### Hangers—

*Barn Door, New Pattern, Round Groove, Regular:*

| *Inch* | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| *Doz* | $0.85 | 1.20 | 1.50 | 1.90 | 2.30 |

*Barn Door, New England Pattern, Check Back, Regular:*

| *Inch* | 3 | 4 | 5 | 6 |
|---|---|---|---|---|
| *Doz* | $1.30 | 1.75 | 2.50 | 3.00 |

Chicago Spring Butt Co.:
Friction ..... 25%
Oscillating ..... 25%
Big Twin ..... 25%

Chisholm & Moore Mfg. Co.:
Baggage Car Door ..... 50%
Elevator ..... 40%
Railroad ..... 55%

Cronk Hanger Co.:
Loose Axle ..... 60%
Roller Bearing ..... 60&10%

Lane Bros. Co.:
Parlor, Ball Bearing ..... $4.15
Parlor, Standard ..... $3.35
Parlor, New Model ..... $2.85
Parlor New Champion ..... $2.25
Barn Door, Standard .. 5&10&10&5%
Covered ..... 50&10&10%
Special ..... 50&10&10&5%

Lawrence Bros.:
Advance ..... 60%
Cleveland ..... 70%
Crown ..... 60%
New York ..... 60%
Peerless ..... 60&10%
Sterling ..... 60%

McKinney Mfg. Co.:
No. 1, Special, $15 ..... 60&10%
No. 2, Standard, $18 ..... 60&10%

Myers' Stayon Hangers and Track, 50&10% (net)

Stowell Mfg. and Foundry Co.:
Acme Parlor Ball Bearing ..... 40%
Atlas ..... 60%
Badger Barn Door ..... 50%
Baggage Car Door ..... 50%
Climax Anti-Friction ..... 50%
Elevator ..... 40%
Express ..... 50%
Interstate ..... 60%
Laudy Parlor Door ..... 50%
Magic ..... 50%
Matchless ..... 60%
Nansen ..... 60&10%
Railroad ..... 50%
Street Car Door ..... 50%
Steel, Nos. 300, 404, 500 ..... 40&15%
Stowell Parlor Door ..... 50%
Wild West, Nos. 300, 404, 500 ..... 50%
Zenith for Wood Track ..... 50%

Taylor & Boggis Foundry Co.:
Kidder's ..... 50&15&10&5%

Wilcox Mfg. Co.:
Bike Roller Bearing ..... 60&10%
C. J. Roller Bearing ..... 60&10%
Cycle Ball Bearing ..... 50%
Dwarf Ball Bearing ..... 40%
Ives, Wood Track ..... 60&10%
L.T. Roller Bearing ..... 60&10&5%
New Era Roller Bearing ..... 50&10%
O. K. Roller Bearing ..... 60&10&5%
Prindle, Wood Track ..... 60%
Richards' Wood Track ..... 50%
Richards' Steel Track ..... 50&10%
Spencer Roller Bearing ..... 60&10%
Tandem Nos. 1 and 2 ..... 60%
Underwriters' Roller Bearing ..... 40%
Velvet ..... 50%
Wilcox Auditorium Ball Bearing..20%
Wilcox Barn Trolley No. 123 ..... 40%
Wilcox Elevator Door Hangers, Nos 112 and 122½ ..... 50%
Wilcox Elevator Door Hangers, No. 132 ..... 40%
Wilcox Fire Trolley, Roller Bearing ..... 30%
Wilcox Le Roy Noiseless Ball Bearing ..... 40%
Wilcox New Century ..... 50&10&10%
Wilcox O. K. Steel Track ..... 50%
Wilcox O. K. Trolley ..... 50%
Wilcox Trolley Ball Bearing ..... 40%
Wilcox Wideman Narrow Gauge, Ball Bearing ..... 40%

Extra 5&10% often given.

### Harness Menders—See *Menders.*

### Harness Snaps—See *Snaps.*

### Hasps—

McKinney's Perfect Hasp ₱ doz. ..... 50%

Wrought Hasps, Staples, &c.—See *Wrought Goods.*

### Hatchets—

*Best Brands ..... 50@50&10%*

*Cheaper Brands ..... 60@60&10%*

*Note.—Net prices often made.*

### Hay and Straw Knives—

See *Knives.*

### Hinges—

### Blind and Shutter Hinges—

*Surface Gravity Locking Blind: (Victor; National; 1858 O. P. Niagara; Clark's O. P.; Clark' Tip; Buffalo.)*

| *No.* | 1 | 3 | 5 |
|---|---|---|---|
| *Doz. pair* | $0.75 | 1.45 | 2.90 |

*Mortise Shutter: (L. & P., O. S., Dixie, &c.)*

| *No.* | 1 | 1¼ | 2 | 2½ |
|---|---|---|---|---|
| *Doz. pair* | $0.60 | .55 | .52 | .45 |

*Mortise Reversible Shutter, (Buffalo, &c.)*

| *No.* | 1 | 1½ | 2 |
|---|---|---|---|
| *Doz. pair* | $0.65 | .60 | .55 |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 ..... 10%

Parker ..... 70&75%

Reading's Gravity ..... 75&10%

Sargent's, Nos. 1, 3, 5, 11 & 13 ..... 70&10&70&20%

Stanley's Steel Gravity Blind Hinges, ₱ doz. sets, without screws, $0.80; with screws, $1.15.

Wrightsville H'dware Co.:
O. S., Lull & Porter ..... 80&2½%
Acme, Lull & Porter ..... 75&10%
Queen City Reversible ..... 75&10%
Stenger's Positive Locking, Nos. 1 & 3 ..... 70&10&5%
Shepard's Noiseless, Nos. 60, 65, 55 ..... 70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5 ..... 75&7½%
1900, Old Pat'n, Nos. 1, 3 & 5 ..... 75&7½%
Tip Pat'n, Nos. 1, 3 & 5 ..... 75&7½%
Buffalo Gravity Locking, Nos. 1, 3 & 5 ..... 75&7½%
Shepard's Double Locking, Nos. 30 & 25 ..... 70&10%
Champion Gravity Locking, No. 75 ..... 75&7½%
Steamboat Gravity Locking, No. 10 ..... 75&7½%
Pioneer, Nos. 060, 45 & 55½ ..... 75&7½%
Empire, Nos. 101 & 103 ..... 70&7½%
W. H. Co.'s Mortise Gravity Locking, No. 2 ..... 60&10%

Extra 25@33⅓%

### Gate Hinges—

*Clark's or Shepard's—Doz. sets:*

| *No.* | 1 | 2 | 3 |
|---|---|---|---|
| *Hinges with Latches* | $1.85 | 1.90 | 2.65 |
| *Hinges only* | $1.30 | 1.50 | 2.00 |
| *Latches only* | .60 | .60 | .65 |

*New England:*

| *With Latch* | doz | @$1.55 |
|---|---|---|
| *Without Latch* | doz. | @$1.25 |

*Reversible Self-Closing:*

| *With Latch* | doz. | @$1.80 |
|---|---|---|
| *Without Latch* | doz. | @$1.45 |

*Western:*

| *With Latch* | doz. | $1.50@1.75 |
|---|---|---|
| *Without Latch* | doz. | $0.95@1.50 |

Wrightsville H'dware Co.:
Shepard's or Clark's, doz. sets,

| No. | 1 | 2 | 3 |
|---|---|---|---|
| Hinges with Latches | $1.80 | 2.00 | 2.75 |
| Hinges only | 1.30 | 1.50 | 2.00 |
| Latches only | .65 | .65 | .70 |

### Spring Hinges—

*Holdback, Cast Iron, gro. $8.00@8.50*

*Non-Holdback, Cast Iron gro $7@7.50*

J. Bardsley
Bardsley's Patent Checking ..... 15%

Bommer Bros.:
Bommer Ball Bring Floor Hinges 40%
Bommer Spring Hinges ..... 40%

Chicago Spring Butt Co.:
Chicago ..... 25%
Floor Hinge ..... 5%
Garden City Engine House ..... 25%
Keene's Saloon Door ..... 35%
Triple End ..... 50%

Columbian Hdw. Co.:
Acme, Wrt. Steel ..... 30%
Acme, Brass ..... 20&5%
American ..... 30%
Columbia, No. 14 ..... ₱ gr. $9.00
Columbia, No. 18 ..... ₱ gr. $25.00
Columbia, Adjustable, No. 7. ₱ gr. $12.00
Gem new list ..... 30%
Clover Leaf ..... ₱ gr. $12.50
Oxford new list ..... 30%

Hoffman Hinge & Foundry Co.:
No. 70 & 80 Holdback Detachable $8.50

Lawson Mfg. Co.:
Matchless ..... 35%
Matchless Pivot ..... 45%

Payson Mfg. Co.:
Oblique ..... 50&10%

Shelby Spring Hinge Co.:
Crown Jamb Hinge ..... 40%
Chief Ball Bearing Floor Hinge..45%
Royal Ball Bearing Floor Hinge..45%

Stover Mfg. Co.:
Ideal, No. 18, Detachable, ₱ gr $12.50
Ideal, No. 4 ..... ₱ gr. $9.00
New Idea No. 1 ..... ₱ gr. $9.00
New Idea, Double Acting ..... 45%

Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—

*Strap and T Hinges, &c., list Mar. 15, 1901:*

| *Light Strap Hinges* | | 70% |
|---|---|---|
| *Heavy Strap Hinges* | | 75&10% |
| *Light T Hinges* | | 66⅔&5% |
| *Heavy T Hinges* | | 60&5% |
| *Extra Heavy T Hinges* | | 75% |
| *Hinge Hasps* | | 55% |
| *Cor. Heavy Strap* | | 75&10% |
| *Cor. Ex. Heavy T* | | 75% |
| *Screw Hook and Strap.* | *6 to 12 in.* | *lb. 3¼c* |
| | *11 to 20 in* | *lb. 3 c* |
| | *22 to 36 in* | *lb. 2¾c* |

*Screw Hook and Eye:*

| *¾ to 1 inch* | *lb. 5 c* |
|---|---|
| *⅝ inch* | *lb. 6 c* |
| *½ inch* | *lb. 7 c* |

### Miscellaneous—

Hoffman's Steel Spring Butt Hinges ..... 40&10%

Hoffman's Offset Refrigerator Hinges ..... 40&10%

## Hods, Coal—

*Galv. Open..$2.70 3.00 3.30 5.60 ₱ doz.*

*Jap. Open...$2.10 2.40 2.70 3.00 ₱ doz.*

*Galv. Funnel..$3.30 3.60 3.90 4.20 ₱ doz.*

*Jap. Funnel..$2.70 3.00 3.30 3.60 ₱ doz.*

## Hoes— Eye—

*Scovil and Oval Pattern ..... 60&5@60&10&5%*

*Grub, list Feb. 23, 1899.... 70@70&10%*

D. & H. Scovil ..... 35%

### Handled—

*Sept. 1, 1900, List:*

*Field and Garden ..... 75&2%*

*Ladies', Boys', Toy and Onion... 70&10&10%*

*Street and Mortar ..... 75&7½&2%*

*Cotton ..... 70&10&10&5&2%*

*Planters' ..... 70&30%*

*Weeding ..... 75%*

*Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.*

Ft. Madison Crucible Garden Hoe 75&2%

Ft. Madison Crescent Cultivator Hoe, per doz. ..... 75&10&2%

Ft. Madison Mattock Hoes:
Regular Weight ..... ₱ doz. $4.50
Junior Size ..... ₱ doz. $4.00

Ft. Madison Sprouting Hoe, ₱ doz. $4.80

Ft. Madison Dixie Tobacco Hoe..75&20%

Kretsinger's Cut Easy, per doz.... 75&2%

Warren Hoe ..... 60%

W. & C. Ivanhoe ..... 75&2%

B. B. Cultivator Hoe ..... 75&10&2%

Acme Weeding ..... 75&10&2%

W. & C. Lightning Shuffle Hoe, ₱ doz. $4.85

## Hog Rings and Ringers—

See *Rings and Ringers.*

## Hoisting Apparatus—

See *Machines, Hoisting.*

## Hollow Ware—

See *Ware, Hollow.*

## Holders— Bit—

Angular, ₱ doz. $24.00 ..... 45&10%

### Door—

Empire ..... 50%

### File and Tool—

Nicholson File Holders and File Handles ..... 33⅓%

### Hooks— Cast Iron—

Bird Cage, Reading ..... 60%

Bird Cage, Sargent's List ..... 60%

Ceiling, Sargent's List ..... 40&10%

Clothes Line, Hoffman's ..... 40&10%

Clothes Line, Reading List ..... 65&10@65&10&10%

Clothes Line, Sargent's List..5°&20&10%

Coat and Hat, Sargent's List..... 45&10%

Clothes Line, Stowell's ..... 70%

Coat and Hat, Stowell's ..... 70%

Coat and Hat, Reading ..... 70&75%

Coat and Hat, Wrightsville ..... 65&10%

Harness, Reading List ..... 70&10@75%

### Wire—

*Belt ..... 80%*

*Wire C. & H. Hooks..60&10@60&10&5%*

Atlas, Coat and Hat:
Single Cases ..... 50%
10 Case Lots ..... 50&10%

Czar Harness ..... 50&10&5%

Wire Coat and Hat:
Acme ..... 60%
B. B. ..... 60%
V Brace, Chief and Czar ..... 60%

Gem ..... 60%

Bright Wire Goods—See *Wire.*

### Wrought Iron—

*Box, 6 in., per doz, $1.50; 8 in., $1.75; 10 in., $2.00.*

*Cotton ..... doz. $1.05@1.25*

Wrought Staples, Hooks, &c.—See *Wrought Goods.*

### Miscellaneous—

*Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50*

| *Grass ..... Nos.* | *1* | *2* | *3* | *4* |
|---|---|---|---|---|
| *Best* | $1.50 | 1.75 | 2.00 | |
| *Common* | $1.30 | 1.30 | 1.40 | 1.60 |

*Potato and Manure ..... 70%*

*Whiffletree ..... lb. 4¾c*

*Hooks and Eyes:*
*Brass ..... 60&10&10@70%*
*Malleable Iron ..... 70&5@70&10%*

Covert Saddlery Works' Self Locking Gate and Door Hook ..... 60%

Crown Picture ..... 50&10%

Bench Hooks—See *Bench Stops.*

Corn Hooks—See *Knives, Corn.*

## Horse Nails—See *Nails, Horse*

## Horseshoes—

See *Shoes, Horse.*

## Hose Rubber—

*Garden Hose, ¾-inch:*

| *Competition* | *ft.* | 4¼@ | 4¾c |
|---|---|---|---|
| *3-ply Standard* | *ft.* | 5 @ | 6 c |
| *4-ply Standard* | *ft.* | 8 @ | 9 c |
| *5-ply extra* | *ft.* | 9 @ | 10 c |
| *4-ply extra* | *ft.* | 11 @ | 12 c |

*Cotton Garden, ¾-in., coupled:*

| *Low Grade* | *ft.* | 6 @ | 7 c |
|---|---|---|---|
| *Fair quality* | *ft.* | 8 @ | 9 c |

## Irons— Sad—

*From 4 to 10 ..... lb 2¾@3c*

*B. B. Sad Irons ..... lb. 3¼@3¾c*

*Chinese Laundry ..... lb. 5@5¼c*

*Chinese Sad ..... lb. 3¼@3½*

*Mrs. Potts', per set:*

| *Nos.* | 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| | 65@70c | 60@65c | 75@80c | 70@75c |

*New England Pressing, lb.. 3¼@3½c*

## Soldering—

*Soldering Copper ..... 18@19*
*2 lb., and up ..... 20@21c*

Covert Mfg. Co. ..... 20&2%

Smith & Hemenway Co's Sets ..... 70%

## Pinking—

*Pinking Irons ..... doz. 50@60c*

## Jack Screws—See *Screws.*

## Jacks, Wagon—

Covert Mfg. Co., Steel ..... 45&2%

Covert's Saddlery Works':
Daisy ..... 60&10%
Victor ..... 60&10%

Lockport ..... 50%

Lane's Steel ..... 30&10%

## Kettles—

*Brass, Spun, Plain ..... 20@25%*

Enameled and Cast Iron—See *Ware, Hollow.*

## Knife Sharpeners—

See *Sharpeners, Knife.*

## Knives—

### Butcher, Shoe, &c.—

Foster Bros.' Butcher, &c. ..... 30%

Hartzell Cutlery Co. ..... 30&5%

Smith & Hemenway Co ..... 40&10%

Hay and Straw—See *Hay Knives.*

### Corn—

Ft. Madison Cut-Easy, ₱ doz. ..... $3.25

Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List ..... 70&5@70&10%*

Adjustable Handle ..... 25%

Bradley's ..... 35%

C. E. Jennings & Co. Nos. 45, 46 .60&10%

Jennings & Griffin, Nos. 51, 52. 60&10&10%

Swan's ..... 70&10&2½%

Watrous ..... 16⅔&10%

L. & I. J. White ..... 20&5@25%

### Hay and Straw—

*Lightning ..... per doz. $5.00@5.25*

Iwan's Sickle Edge ..... ₱ doz. $10.00

Iwan's Serrated ..... ₱ doz., $11.00

Maine ..... ₱ doz, $8.50

### Mincing—

Buffalo ..... ₱ gro. $15.00

### Miscellaneous—

*Farriers' ..... doz. $2.00@3.60*

Wostenholm's ..... ₱ doz. $3.00@3.25

### Knobs—

*Base, 2¼-inch, Birch, or Maple, Rubber tip, gro ..... $1.10@1.20*

*Carriage, Jap, all sizes ..gro. 30@33c*

*Door, Mineral ..... doz. 60@65c*

*Door, Por. Jap'd ..... doz, 65@70c*

*Door, Por. Nickel .... doz. $2.00@2.10*

Bardsley's Wood Door, Shutter, &c. .15%

Picture, Sargent's ..... 60&10%

## Lacing Leather

See *Belting Leather.*

## Ladders Step Etc.—

Goshen Mfg. Co.'s Step, etc. ..... 50%

Lane's Store ..... 25%

Myers' Noiseless Store Ladders.....50%

### Ladies' Melting—
L. & J. Mfg. Co.....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....45&10%

### Lanterns—Tubular—
*Regular Tubular*.....doz. $4.35@4.75
*Lift Tubular*.....doz. $4.75@5.25
*Hinge Tubular*.....doz. $4.75@5.25
*Other Styles*.....40&10@40&10&5%

### Bull's Eye Police—
*No. 1. 2¾ inch*.....$2.50@2.75
*No. 2. 3 inch*.....$2.75@3.00

### Latches, Thumb—
*Roggin's Latches*.....doz. 30@33c

### Lawn Mowers—
See *Mowers, Lawn.*

### Leaders Cattle—
*Small*.....doz. 55c; *large*, 60c
Covert Mfg. Co.....45&2%

### Lemon Squeezers—
See *Squeezers, Lemon.*

### Lifters, Transom—
Solid Grip, Payson Mfg. Co.....80%
K. & C.....33⅓%

### Lines—
| *Wire Clothes, Nos...* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet*..... | $2.20 | 2.00 | 1.65 |
| *75 feet*..... | $1.80 | 1.70 | 1.30 |

Ossawan Mills.
Crown Solid Braided Chalk.....33⅓%
Mason's, No. 0 to No. 5.....33⅓%
Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3.....40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gr.....30%

### Locks—Cabinet—
*Cabinet Locks*.....33⅓@33⅓&6@7½&%

### Door Locks, Latches, &c.—
[Net prices are very often made on these goods.]
Reading Hardware Co.....50%
R. & E. Mfg. Co.....40%
Sargent & Co.....40@40&10%

### Elevator—
Stowell's.....40%

### Padlocks—
*Wrought Iron*.....75&10&5@80&5%
R. & E. Mfg. Co. Wrt. Steel and Brass.....75@75&10%

### Sash, &c.—
Fitch's:
Bronze and Brass.....60&5%
Iron.....70%
Ives' Patent.:
Bronze and Brass.....55&7½%
Iron.....60&2½%
Wrought Bronze and Brass.....50&5%
Wrought Steel.....55%
Payson's signal.....80%
Reading.....60&10&10@70%

## Machines—Boring—
*Common, Upright, Without Augers,* $2.00

*Common, Angular, Without Augers,* $2.25

Without Augers.

| R. & E Mfg. Co.: | Upright. | Angular. |
|---|---|---|
| Improved No. 3. | $4.25 | No. 1. $5.00 |
| Improved No. 4. | 3.75 | No. 2. 3.38 |
| Improved No. 5. | 2.75 | |
| Jennings'.. | No. 4, 3.15 | No. 1, 3.50 |
| Millers' Falls..... | | 5.75 |
| Snell's, Rice's Pat. | 2.50 | 2.75 |

### Hoisting—
Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.20%
Moore's Portable Pneumatic Hoist....25%

### Ice Cutting—
Chandler's.....15&10%

### Washing—
Wayne American.....₱ doz. $28.00
Western Star, No. 2.....₱ doz. 28.00
Western Star, No. 3.....₱ doz. 30.00
St. Louis, No. 41.....₱ doz. 60.00

### Mallets—
*Hickory*.....45&5@50%
*Lignumvitæ*.....45&5@50%
*Tinners', Hickory and Applewood, doz*.....50@55c

### Mats—Door—
Elastic Steel (W. G. Co.).....10%

### Mattocks—
See *Picks and Mattocks.*

### Meat Cutters—
See *Cutters, Meat.*

### Milk Cans—See *Cans, Milk*

### Mills—Coffee—
Enterprise Mfg. Co.....25@30%
National, list Jan. 1, '94.....30%
Parker's Columbia and Victor@.....50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros Co.....30%

### Mincing Knives—
See *Knives, Mincing.*

### Molasses Gates—
See *Gates, Molasses.*

### Money Drawers—
See *Drawers, Money.*

### Mowers Lawn—
*Net prices are generally quoted.*
*Cheap*.....*all sizes, $1.90@1.95*
*Good*.....*all sizes, $2.25@2.50*

| | *10* | *12* | *14* | *16-inch* |
|---|---|---|---|---|
| *High Grade* | 4.25 | 4.50 | 4.75 | 5.00 |

Continental.....60&10&5%
Great American.....70&5%
Great American Ball Bearing...60&10&5%
Quaker City.....70&5%
Pennsylvania.....60&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....40%
Pennsylvania Pony.....45%
Philadelphia:
Styles M., S. C., K., T.....70&5%
Style A, all Steel.....60&10%
Style E, Low Wheel.....60&10%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, low list...50&5%

## Nails—
*Cut and Wire. See Trade Report. Wire Nails and Brads, Papered. List July 20, 1899. 85&10@85&10&10%*
*Hungarian, Finishing, Upholsterers', &c. See Tacks.*

### Horse—

| Nos. | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|
| A. C..... | 25¢ | 23¢ | 22¢ | 21¢ | 21¢....40&5% |
| Ausable... | 28¢ | 26¢ | 25¢ | 24¢ | 23¢..50&10% |
| C. B. K.... | 25¢ | 25¢ | 22¢ | 21¢ | 21¢.....40% |
| Champi'n | 28¢ | 26¢ | 25¢ | 24¢ | 23¢40&10&5% |
| Clinto.... | 19¢ | 17¢ | 16¢ | 15¢ | 14¢30&10&5% |
| Maud S.... | 25¢ | 23¢ | 22¢ | 21¢ | 21¢.....50% |
| Putnam.. | 23¢ | 21¢ | 20¢ | 19¢ | 18¢.....33⅓% |

Putnam.

| Cold Rol'd | 19¢ | 18¢ | 17¢ | 16¢ | .....10&10% |
|---|---|---|---|---|---|

**Vulcan ...23¢ 21¢ 20¢ 19¢ 18¢...25&10%**

American, Nos. 5 to 10 ₱ ₱.....90@95c
Neponset.....Nos. 5 to 10¢ ₱ ₱ 12¢
*Jobbers' special brands...per lb. 8@9c*

### Picture
1½ 2 2¼ 3 3½ *in.*
*Brass Head. .45 .60 .70 .95 1.00 gro.*
*Por. Head... .. 1.10 1.10 1.10 .. gro.*

### Needles Tobacco
Nagley's Tan Tobacco.....₱ box $2.00

### Nippers, See *Pliers and Nippers.*

### Nut Crackers—
See *Crackers, Nut.*

### Nuts—
*Cold Punched:* *Off list.*
*Mfrs. or U. S. Standard.*
*Square, plain*.....*$4.50*
*Hexagon, plain*.....*$4.60*
*Square, C. T. & R.*.....*$4.70*
*Hexagon, C. T. & R.*.....*$5.00*
*Hot Pressed:*
*Mfrs., U. S. or Nar. Gauge Stan'd.*
*Square Blank*.....*$4.80*
*Hexagon Blank*.....*$5.00*
*Square Tapped*.....*$4.60*
*Hexagon Tapped*.....*$4.80*

## Oakum—
*Best or Government*.....*lb. 6¼c*
*Navy*.....*lb. 5 c*
*U. S. Navy*.....*lb. 5¾c*
*Plumbers' Spun Oakum*.....*23¼c*
*In carload lots ¼c lb. off f.o.b. New York.*

### Oil Axle—
Snow Flake: } 40&10%
1 pt. cans, per doz.....$3.00
1 qt. cans, per doz.....$4.80
1 gal. cans, per doz.....$15 00
5 gal. cans, per doz.....$66.00

### Oil Tanks—See *Tanks, Oil.*

### Oilers—
*Brass and Copper*..40¢&10@40¢&10¢&5%
*Tin or Steel*.....60¢&10@60¢&10¢&5%
*Zinc*.....60¢&10@60¢&10¢&5%
*Paragon:*
*Brass and Copper*.....40¢&10%
*Tin or Steel*.....60¢&10%
*Zinc*.....60¢&10%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₱ doz. 20%
Malleable, Hammers' Old Pattern, same list.....50&10%
Wilmot & Hobbs Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers etc,.....60@60&10%

### Openers—Can—
*French*.....*doz. 35c*
*Iron Handle*.....*doz. 25@27c*
*Sprague, Iron Hdle...per doz. 35@40c*
*Sardine Scissors...doz. $1.75@$3.00*
Tip Top.....per doz. $0.75
National, ₱ gro.....$1.75@$2.00
Stowell's.....per doz. 35@45¢
Waldorf, ₱ gro.....$8.25

### Egg—
Nickel Plate.....per doz., $2.25
Silver Plate.....per doz., $3.50

## Packing—
*Asbestos Packing, Wick and Rope, 15@15½c lb.*

### Rubber—
*Sheet, C. I.*.....8@12c
*Sheet, C. O. S.*.....9@13c
*Sheet, C. B. S.*.....10@14c
*Sheet, Pure Gum*.....50@70c
*Sheet, Red*.....35@40c
Jenkins' Standard, ₱ ₱ 80¢...25@25&5%

### Miscellaneous—
*American Packing*.....7@10c *lb.*
*Cotton Packing*.....15@14c *lb.*
*Italian Packing*.....9@12¼c *lb.*
*Jute*.....3½@4c *lb.*
*Russia Packing*.....7@11c *lb.*

### Pails—Creamery
S. S. & Co., with gauges.. No 1 $6.50; No. 2, $5.75 ₱ doz.

### Galvanized
Price per doz.

| *Quart*..... | *10* | *12* | *14* |
|---|---|---|---|
| *Water, Regular*... | 1.75 | 2.00 | 2.25 |
| *Water, Heavy*.... | 3.40 | 3.60 | 3.80 |
| *Fire, Rd. Bottom.* | 2.25 | 2.50 | 3.00 |
| *Well*..... | 2.50 | .... | 3.00 |

### Pans—Dripping—
*Standard List*.....50¢&10@60¢&10%

### Fry—
*Common Lipped:*

| *No.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz.* | *$0.90* | *.95* | *1.10* | *1.25* | *1.55* |

### Roasting and Baking—
Regal, S. S. & Co., ₱ doz., Nos. 5, $4.50; 10 $5.00; 20 $5.50; 30, $6.00.
Simplex, ₱ gro., No. 40 $30.00; 50, $34.50; 60 $39 00; 140, $33.00; 150, $37.50; 160, $43.00.

### Paper—Building Paper—

| *Asbestos:* | *lb.* |
|---|---|
| *Building Felt*..... | *3c* |
| *Mill Board, sheet, 40 x 40 inches*... | *4c* |
| *Mill Board, roll, thicker than 1-16 inch*..... | *3c* |
| *Mill Board, roll, 1-16 in. thick and less*..... | *3c* |

| | *Per roll* |
|---|---|
| *Rosin Sized Sheathing:* | *500 sq. ft.* |
| *Light wt., 25 lbs. to roll*..... | *$0.40* |
| *Medium wt., 30 lbs. to roll*..... | *$0.47* |
| *Heavy wt., 40 lbs. to roll*..... | *$0.60* |
| *Medium Grades Water Proof Sheathing*..... | *$0.65@1.25* |
| *Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton*..... | *$40.00@42.00* |
| *Red Rope Roofing, 250 sq. feet per roll*..... | *$1.65* |

NOTE.—*These goods are often sold at delivered prices.*

### Tarred Paper.
*1 ply (roll 300 sq. ft.), ton..$29.00@32.00*
*2 ply, roll 108 sq. ft*.....*55@65c*
*3 ply, roll 108 sq. ft*.....*77@87c*
*Slater's Felt (roll 500 sq. ft.)*.....*70c*
NOTE.—*Above prices often include delivery.*
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.75

### Sand and Emery—
*List Dec. 23, 1899*.....60@60&10%

### Parers—Apple—
Advance.....₱ doz. $4.50
Baldwin.....₱ doz. $5.00
Bonanza.....each $5.00
Dandy.....each $7.50
Eureka, 1898.....each $16.00
Family Bay State.....₱ doz. $12.00
Hudson's Little Star.....₱ doz. $4.00
Hudson's Rocking Table.....₱ doz. $5.50
Improved Bay State ₱ doz. $27.00@30.00
New Lightning.....₱ doz. $5.50
Reading 72.....₱ doz. $4.00
Reading 78.....₱ doz. $7.00
Turn Table '98.....₱ doz. $5.50
White Mountain.....₱ doz. $4.00

### Potato—
Saratoga.....₱ doz. $5.50
White Mountain.....₱ doz. $4.50

### Paris Green—

| | *per lb.* |
|---|---|
| *Arsenic kegs or casks*..... | *@13 c* |
| *Kegs, 100 to 175 lbs*..... | *@13½c* |
| *Kits, 14, 28, 56 lbs*..... | *@14½c* |
| *Paper boxes, 2 to 5 lbs*..... | *@14½c* |
| *Paper boxes, 1 lb*..... | *@14½c* |
| *Paper boxes, ½ lb*..... | *@15½c* |
| *Paper boxes, ¼ lb*..... | *@16½c* |

### Picks and Mattocks—
*List Feb. 23, 1899*.....70@70&10%

### Pigeons—Clay
Marsh's Black Birds, f.o.b. factory, per M.....$8.75
See also *Traps, Target.*

### Pinking Irons—
See *Irons, Pinking.*

### Pins—Escutcheon—
*Brass*.....60@60&10%
*Iron, list Nov 11, '85*.....60@60&10%

### Pipe, Cast Iron Soil—
*Standard, 2-6 in*.....55&7½%
*Extra Heavy, 2-6 in*.....65&5%
*Fittings*.....70&10&2½%

### Pipe, Merchant, Boiler Tubes, &c.—

| *Merchant Pipe.* | *Black.* | *Galvanized* |
|---|---|---|
| ⅛ to ⅛ *inch*..... | 56% | 43% |
| ¼ to 12 *inch*..... | 64% | 51% |

| *Boiler Tubes.* | *Steel.* | *Black Up to 22 feet.* |
|---|---|---|
| *1 to 1½ inch, inclusive*..... | | 45% |
| *2¼ to 5 inch, inclusive*..... | | 63% |
| *1¾ to 2½ and 6 to 13 inches*..... | | 58% |
| | *Iron.* | *Up to 22 feet.* |
| *1 to 1½ inch and 2½ in*..... | | 39% |
| *1¾ to 2¼ inch*..... | | 38% |
| *2¾ to 13 inch*..... | | 48% |
| | *Casing, Cut Lengths.* | *S. & S.* |
| *2 to 3 inch*..... | | 58% |
| *3¼ to¼ inch*..... | | 60% |
| *4¼ to 12½ inch*..... | | 63% |

### Pipe Sewer—
*Standard Pipe and Fittings, 2 to 24 in.*
*New England*.....70%
*New York and New Jersey*.....73%
*Maryland, Delaware, East Penn.*.....75%
*West Penn and West Va.*.....75%
*Virginia*.....78%
*Ohio, Michigan and Ky.*.....80%
*Carload lots are generally delivered.*

### Planes and Plane Irons—Wood Planes—
*Molding*.....40&2½@40&10%
*Bench, First quality*.45&10@45&10&5%
*Bench, Second qual..*.50&10@50&10&5%
Bailey's (Stanley R. & L. Co)
25&10@25&10&10%
Chapin-Stephens Co.:
Bench, Common (Pearce)
50&10@50&10&5%
Bench Extra and Pemium
45&10@45&10&5%
Molding.....40&2½@40&10%
Gage Self Setting.....35%

### Iron Planes—
Bailey's (Stanley R. & L. Co)
25&10@25&10&10%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....20&10@20&10&10%
Sargent's.....60%

### Plane Irons—
*Wood Bench Plane Irons*.....
*50&5@50&10&5%*
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10&5%
Stanley R. & L. Co...20&10@20&10&10%
L. & L. J. Hutte.....20&5@25%

### Planters, Corn, Hand.
Kohler's Eclipse.....₱ doz. $9.00

### Plates—
*Felloe*.....*lb. 3¾@4c*
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00.....50%

### Pliers and Nippers—
*Button Pliers*.....75@75&10%
*Gas Burner, per doz., 5 in., $1.15@ $1.20; 6 in., $1.35@$1.45*
*Gas Pipe..* 7 8 10 12-in.
*$1.75 $2.00 $2.25 $3.75*
Acme Nippers.....50@50&5%
Bernard's:
Parallel Pliers, &c.....35%
Paragon Pliers.....50&5%
Lodi Pliers.....50&5%
Elm City Fence Pliers.....35%
Cronk Hanger Co.:
American Button.....75&10%
Cronk's.....60%
Improved Button.....70&10%
Stub's Pattern.....50%
Combination and others.....25%
Heller's Farriers' Nippers, Pincers, and Tools 50@50&5%
P., S. & W. Tinners' Cutting Nippers, 30@30&10%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

### Plumbs and Levels—
*Plumbs and Levels*.....75@75&10%
Chapin-Stephens Co.:
Pocket Levels.....40@40&10&10%
Plumbs and Levels.....40@40&10&10%
Disston's Plumbs and Levels.....70%
Disston's Pocket Levels.70&10&10@75&10%
C. E. Jennings & Co.'s Iron.....35&10%
C. E. Jennings & Co.'s Iron, adjustable. 33⅓&10%
Stanley R. & L. Co .....40@40&10&10%
Stanley's Duplex.....20@20&10&10%
Woods' Extension.....33⅓%

### Poachers, Egg—
Buffalo Steam Egg Poachers, ₱ doz., No. 1, $7.20; No. 2, $11.00 No. 3, $11.00; No. 4, $14.50.....50%

### Points, Claziers'—
*Bulk and 1 lb. papers.. lb.* 8 c@..
*½-lb. papers*.....*lb.* 8½c@..
*¼-lb. papers*.....*lb.* 9 c@...

### Pokes, Animal—
Ft. Madison Hawkeye.....₱ doz. $3.25
Ft. Madison Western.....₱ doz. $3.75

### Police Goods—
*Manufacturers' Lists*.....25@25&5%
Tower's.....25%

### Polish—Metal—
Prestoline Liquid, No. 1 (½ pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.72.....40%
Prestoline Paste.....40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gr. $4.50; ½ ₱ boxes, ₱ doz. $1.25; 1 ₱ boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ¼ pt. cans, ₱ doz.....$2.00

### Stove—
Black Eagle Benzine Paste, 5 ₱ cans .. ₱ ₱ 10¢
Black Eagle, Liquid, ½ pt. cans ₱ doz. 75¢
Black Jack Paste, ¾ ₱ cans. ₱ gro. $9.00
Ladd's Black Beauty, gr. $10.00.....50%
Joseph Dixon's, ₱ gr. $5.75.....10%
Dixon's Plumbago.....₱ ₱ 8¢
Fireside.....₱ gr. $2.50
Gem, ₱ gr. $4.50.....10%
Japanese.....₱ gr. $3.50
Jet Black.....₱ gr. $3.50
Peerless Iron Enamel, ½ pt. cans..... ₱ doz. $1.50
Wynn's:
Black Silk, 5 ₱ pail.....each 70¢
Black Silk, ½ ₱ box.....₱ doz. $1.00
Black Silk, 5 oz. box.....₱ doz. $0.75
Black Silk, ½ pt. liq.....₱ doz. $1.00

### Poppers, Corn—
*1 qt., Square*.....*gro. $7.70*
*1 qt., Round*.....*gro. $8.25*
*1½ qt., Round*.....*gro. 9.90*
*2 qt., Round*.....*gro. 11.00*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Potato Parers—
See *Parers, Potato.*

### Pots—Glue—
*Enameled*.....45%
*Tinned*.....40%

### Powder—
*In Canisters:*
*Duck, ½ lb. each*.....45c
*Fine Sporting, 1 lb. each*.....75c
*Rifle, ½-lb. each*.....15c
*Rifle, 1-lb. each*.....25c
*In Kegs:*
*Duck, 6½-lb. kegs*.....$2.25
*Duck, 12½-lb. kegs*.....$4.25
*Duck, 25-lb kegs*.....$8.00
*Rifle, 6¼-lb kegs*.....$1.25
*Rifle, 12½-lb. kegs*.....$2.25
*Rifle, 25-lb. kegs*.....$4.00
King's Semi-Smokeless:
Keg (25 ₱ bulk).....$6.50
Half Keg (12½ ₱ bulk).....$3.50
Quarter Keg (6¼ ₱ bulk).....$1.90
Case 24 (1 ₱ cans bulk).....$8.50
Half case 12 (1 ₱ cans bulk).....$4.50

| King's Smokeless: | Shot Gun | Rifle |
|---|---|---|
| Keg (25 ₱ bulk)..... | $12 00 | $15.00 |
| Half Keg (12½ ₱ bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ ₱ bulk) | 3.25 | 4.00 |
| Case 24 (1 ₱ cans bulk)..14.00 | | 17 00 |
| Half case 12 (1 ₱ cans bulk) | 7.25 | 8 75 |

### Presses—Fruit and Jelly—
Enterprise Mfg. Co.....20@25%

### Seal Presses—
Morrill's No. 1, per doz. $20.00.....50%
Morrill's No. 2, per doz. $22 50.....50%

### Pruning Hooks and Shears—See *Shears.*

### Pullers Nail—
Cyclops.....50%
Miller's Falls, No. 3, per doz. $12.00..... 33⅓&10%
Pearson No. 1, Cyclone Spike Puller, each $50.00.....50%
Peltcan, ₱ doz. $9.00.....40&10%
Samson.....₱ doz $18.00
Scranton, Case Lots:
No. 1 (large), ₱ doz. $6.50; No. 2 (large), $5.75; No 3 (small), $5.00; No. 2-B (large), $5.50; No. 3-B (small), $5.00; No. 2-D (large), $4.50; No 3-D (small) $4.00.
Smith & Hemenway Co.:
Diamond B, No. 2, case lots. ₱ doz $6.00
Diamond B, No. 3, case lots. ₱ doz $5.50
Giant, No. 1, ₱ doz. $18; No. 2, $16.50; No. 3, $15.....40%

### Pulleys—Single Wheel—

| *Inch*..... | *2* | *2½* | *3* |
|---|---|---|---|
| *Awning ..doz.* | *$0.50* | *.75* | *1.00* |

*Hay Fork, Swivel or Solid Eye*.....

| *doz., 4 in.,* | *$0.95* | *; 5 in ,* | *$1.05* |
|---|---|---|---|

| *Inch*..... | *2* | *2½* | *2½* |
|---|---|---|---|
| *Hot House, doz* | *$0.60* | *.80* | *1.10* |
| *Inch*..... | *1¼* | *1¾* | *1¾* | *2* |
| *Screw*.....*doz.* | *$0.14* | *.17* | *.20* | *.26* |
| *Inch*..... | *1¾* | *2* | *2½* | *2½* |
| *Side*.....*doz.* | *$0.27* | *.35* | *.48* | *.55* |
| *Inch*..... | *1½* | *1¾* | *2* | *2½* |
| *Tackle*....*doz.* | *$0.27* | *.37* | *.50* | *.89* |

Stowell's:
Ceiling or End, Anti-Friction.....60%
Dumb Waiter, Anti-Friction...60&10%
Hay Fork, Anti-Fricton, 5-in. Wheel, ₱ doz. $12.00.....50%
Electric Light.....60%
Side, Anti-Friction.....60&10%

### Sash Pulleys—
*Common Frame; Square or Round End per doz., 1¾ in., 13c.; 2 in., 16c*
*Auger Mortise, no Face Plate, per doz. 1¾ in., 12c.; 2 in., 15c.*
*Auger Mortise, with Face Plate, per doz., 1¾ in., 13c.; 2 in., 15½c.*

Acme.....1¾ in., 16¢; 2 in., 19¢
Common Sense, 1¾ in.... ₱ doz., 18¢; 2 in., 20¢.
Fox-All-Steel, Nos. 3 and 7, 2¼ in. ₱ doz 25¢
No. 9, 1¾ in.... ₱ doz. 20¢
Extra for Plated Finish..., ₱ doz. 20¢
Extra for Anti-Friction Bronze Bushing..... ₱ doz 10¢
Grand Rapids All Steel Noiseless....40%
Ideal No. 13.....1¾ in., ₱ doz., 16¢
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy....1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

## Pumps—

*Cistern*.....60@60&10%
*Pitcher Spout*.....75@75&10%
*Wood*.....50@50&10%
*Pump Leathers, Lower and Plunger Valves—Per gro.:*

| *Inch..* | 2 | 2¼ | 2½ | 2¾ |
|---|---|---|---|---|
| | $2.20 | 2.50 | 2.75 | 3.00 |
| *Inch..* | 3 | 3¼ | 3½ | 3¾ | 4 |
| | $3.30 | 3.60 | 3.85 | 4.10 | 4.40 |

Barnes Dbl. Acting (low list).....50%
Flint & Walling's Fast Mail (low list).50%
Flint & Walling's Pitcher Spout.....75%
Loud's Suction Pumps, U. H. Co.....20%
Myer's Pumps, low list.....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50&10%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00

## Punches—

*Revolving (4 tubes)...doz. $3.75@4.25*
*Saddlers' or Drive, good..doz. 65@70c*
*Spring, single tube, good quality....*
*$1.75@2.00*
Bemis & Call Co.'s Cast Steel Drive....50%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50%
Morrill's No. 1 (A.B.C.), ₱ doz., $15.00 ..50%
No. 2, ₱ doz. $22.50.....50%
No. 2, Metal, ₱ doz., $45.00.....50%
Bench Punch, each, $30.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Steel Screw, B & K. Mfg. Co.....40%
Tinners Hollow, P., S.& W.Co.35@35&5%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44.....60%

## Rail— Barn Door, &c.—

*Cast Iron, Barn Door: Flange Screw Holes for Rd. Groove Wheels:*

| ⅛ | ⅝ | ¾ *In.* |
|---|---|---|
| $1.70 | $2.10 | $3.00 *100 feet.* |

*Angular for Sq. Groove Wheels:*

| *Small.* | *Med.* | *Large.* | |
|---|---|---|---|
| $1.60 | 1.95 | 2.70 | *100 feet.* |

*Sliding Door, Brnzed Wr't Iron, ft.6½c*
*Sliding Door, Iron Painted....2½@3c*
*Sliding Door, Wrought Brass, 1⅝ in.....lb. 36c..50%*
Cronk's Double Braced Steel Rail, ₱ foot.....3½¢
Cronk's O. N. T. Rail.....3½¢
Lanes' O. N. T., ₱ 100 ft., 1 inch, $3.10; 1¼ inch, $3.90; 1½ inch, $4.85.
Lanes' Standard, ₱ 100 ft.....3.75
Lawrence Bros.' .....₱ ft. 4½¢
McKinney's None Better.....₱ ft. 3½¢
McKinney's Standard.....₱ ft. 4 ¢
Stowell's Cast Rail.....1½¢
Stowell's Steel Rail, Plain.....2½
Stowell's Wrought Bracket, Plain....3¼¢

## Rakes—

*Net Prices, Malleable Rakes:*

| | *10* | *12* | *14* | *16-tooth* |
|---|---|---|---|---|
| *Shank* | $1.50 | 1.60 | 1.75 | 1.85 |
| *Socket* | $1.65 | 1.80 | 1.95 | 2.10 |

*Sept. 1, 1900, List:*
*Cast Steel*.....70¢@5¢&2%
*Malleable*.....70¢@10¢@75¢&5%
*Lawn Rakes, Metal Head, per doz.,*
*20 teeth*.....$3.25@3.50
*24 teeth*.....$3.60@3.75
Fort Madison Red Head Lawn.....$3 25
Fort Madison Blue Head Lawn.....$3.00
Jackson Lawn, 29 and 30 teeth..... ₱ doz. $4.00
Kohler's:
Lawn Queen, 20-tooth, ₱ doz.....$3.60
Lawn Queen, 24-tooth, ₱ doz.....$3.75
Paragon, 20-tooth, ₱ doz.....$2.85
Paragon, 24-tooth, ₱ doz.....$3.00
Steel Garden, 14-tooth, ₱ doz.....$3.00
Malleable Garden, 14-tooth ₱ doz. $2.25

## Rasps, Horse—

Disston's.....75%
Heller Bros.....70&5%
McCaffrey File Co. Horse Rsps. 60&10&5%
New Nicholson Horse Rasp.....70&10%
See also *Files.*

## Razors—

Boracle.....70%
Fox Razors, No. 42... ₱ doz. $20.00 } 40%
Fox Razors, No. 44... ₱ doz. $24.00 }
Fox Razors, No. 82, Platina, ₱ doz. $34.00 } disc.
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%
Safety Razors.....40%

## Safety Razors—

New Gem, Enameled Boxes, ₱ doz. $12.00
New Gem, Extra Blades.....₱ doz $6.35
New Gem Muslin Outfits, ₱ doz. $ 5.60
New Gem Wood Handle Strop, Machine and Strop.....₱ doz. $14.60

## Razor Strops—

See *Strops, Razor.*

## Reels— Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, 4008, Silver Rubber Populo, Nickeled Populo, Aluminum, German Silver, Bronze, 3-04 N, 06 N, 4 N to 8 PN.....33⅓&5%
6 RW, 102 P and RN, 202 P and PN.40%
G 9.....30%
24 N to 28 PN.....35&10&10%
124 N, 974 PN, 002004 PN, 1020 R and PRN, 202 PR and PRN....50&5%
2004 N.....40&10&5%
5009 PN and N.....50%
2004 P.....50&10&5%
2004 PN.....60%
0024 N.....40&10%
02084 N.....45&12½&5%
Single Action Trout.....40&10%
986 P N, 802 and 802 N.....50&10%
Competitor, 304 and 304 PN .....35%
0304 P and PN.....40&5%
Safety and Salmon.....30%
Shakespeare, Style C.....25%

## Registers—

*List Sept. 2, 1901.*

*Black Jap*.....
*White Jap*.....
*Bronzed*.....
*Nickel Plated*.....
*Electro Plated*.....
} 75&10@80%

*There is a good deal of irregularity in prices of Registers.*

## Revolvers—

*Single Action*.....85@90c
*Double Action, except 44 calibers..$1.50*
*Double Action, 44 calibers*.....*$1.65*
*Automatic*.....*$3.10*
*Hammerless*.....*$3.60*

## Riddles, Grain or Sand—

*16 in. per doz*.....*$1.95@$2.20*
*17 in. per doz*.....*$2.10@$2.35*
*18 in. per doz*.....*$2.25@$2.50*

## Rings and Ringers—

### Bull Rings—

| | *2* | *2½* | *3 Inch.* |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 *doz.* |
| *Copper* | 1.00 | 1.10 | 1.35 *doz.* |

### Hog Rings and Ringers—

*Hill's Rings...gro. boxes, $4.00@4.50*
*Hill's Ringers, Gray Iron, doz. 55@60c*
*Hill's Ringers, Mal. Iron, doz. 75@80c*
*Blair's Rings*.....*per gro. $5.00@5.25*
*Blair's Ringers...per doz. $0.60@ .65*
*Brown's Rings...per gro. $6.00@6.25*
*Brown's Ringers..per doz. $0.75@1.00*
Rapid Rings.....₱ gro. $6.00
Rapid Ringers.....₱ doz. $3.50

## Rivets and Burrs—

*Copper*.....50¢&10%
*Iron or Steel:*
*Tinners'*.....70@70¢&10%
*Miscellaneous*.....70@70¢&10%

## Rivet Sets—See *Sets*

## Roasting and Baking Pans—See *Pans, Roasting and Baking.*

## Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60%
Cronk's Stay.....60&5%
Cronk's Brinkerhoff.....60%
Lane's, Stay.....33⅓&5%
Stowell's Barn Door Stay...₱ dos. $1.35

## Rope—

*Manila, 7-16 in. and larger, tarred or untarred*.....*lb. 13½c*
*Manila*.....⅜-*inch lb. 14 c*
*Manila*.....¼ *and 5-16 inch lb. 14½c*
*Manila, Hay, Hide and Bale Rope, Medium and Coarse*.....*lb. 13½c*
*Sisal, 7-16 in. and larger lb. 10 @10¼c*
*Sisal*.....⅜-*inch..lb. 10¼@10¾c*
*Sisal, ¼ and 5-16 in....lb. 11 @11¼c*
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse*.....*lb. 10¼@10¾c*
*Sisal, Tarred, Medium Lath Yarn*.....*lb. 9¼@ 9½c*
*Cotton Rope:*
*Best*.....¼-*in. and larger lb. 13½c*
*Medium*..¼-*in. and larger lb. 11 c*
*Com*.....¼-*in. and larger lb. 9 c*
*Jute Rope:*
*Thread No. 1, ¼-in. and up lb. 6½c*
*Thread No. 2, ¼-in. and up lb. 6 c*
*Yarn, ¼ in. and up*.....*lb. 4½c*

## Wire Rope—

*Galvanized*.....25c&7½%
*Plain*.....30c&7½%

## Ropes, Hammock—

Covert Mfg. Co.....45&2%
Covert Saddlery Works.....60&5%

## Rules—

*Boxwood*.....60@60¢&10%
*Ivory*.....35¢&10@35¢&10¢&10%
Chapin-Stephens Co.:
Boxwood.....60@60&10%
Ivory.....35&10@35&10&10%
Miscellaneous.....50&10@50&10&10%
Patent Combination.....35&35&10%
Stationers' Rulers.....10@10&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Stanley R. & L. Co.:
Boxwood.....60@60&10%
Ivory.....35@35&10&10%
Upson Nut Co.:
Boxwood.....60@60&10%
Ivory.....35&10@35&10&10%

## Sad Irons—See *Irons, Sad.*

## Sand and Emery Paper and Cloth—

See *Paper and Cloth.*

## Sash Cords—See *Cord, Sash.*

## Sash Locks—See *Locks, Sash.*

## Sash Weights—

See *Weights, Sash.*

## Sausage Stuffers or Fillers—See *Stuffers or Fillers Sausage.*

## Saw Frames—See *Frames, Saw.*

## Saw Sets—See *Sets, Saw.*

## Saw Tools—See *Tools, Saw.*

## Saws—

Atkins:
Circular.....50@50&10%
Band.....50¢&10@60%
Cross Cuts.....35&5%
Mulay, Mill and Drag.....50&10%
One-Man Saw.....40%
Wood Saws.....40%
Hand, Compass, &c.....40%
Chapin-Stephens Co.: Turning Saw Frames and Saws.....50@50&10%
Diamond Saw and Stamping Works: Sterling Kitchen Saws.....25%
Disston's:
Circular Solid and Inserted Tooth.50%
Band 2 to 14 in. wide.....60%
Band ¼ to 1¼.....70%
Crosscuts.....45@45&10%
Narrow Crosscuts.....50@50&10%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35@35&7½%
Woodsaw Blades.....40@40&7½%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8.....25@35&7½%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination.....30@30&7½%
Compass, Keyhole, &c.....25@25&7½%
Butcher Saws and Blades..35@35&7½%
C. E. Jennings & Co.'s.:
Back Saws.....25&10%
Butcher Saws.....30&10%
Compass and Key Hole Saws.35&5&10%
Framed Wood Saws.....30&10%
Hand Saws.....30&2½&10%
Wood Saw Blades.....30&10%
Millers Falls:
Butcher Saws.....15&10%
Star Saw Blades.....15&10%
Peace:
Circular and Mill.....50%
Cross Cuts, list Jan. 1, '99.....50%
Hand, Panel and Rip.....30%
Richardson:
Circular and Mill.....50%
Hand, &c.....30%
X Cuts, list Jan. 1, '99.....50%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws..50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Compass, Keyhole, &c.....25@25&7½%
Wood Saws.....35@35&7½%

## Hack Saws—

Disston:
Concave Blades.....25%
Keystone.....30%
Hack Saw Frames.....30%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180.....35&5&10%
Hack Saws, Nos. 175, 180, complete. 35&5&10%
Griffin's Hack Saw Frames ..35&5&10%
Griffin's Hack Saw Blades.....35&5&10%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades.....25%
Sterling Hack Saw Frames.....20%

## Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

## Scale Beams—

See *Beams, Scale.*

## Scalers Fish—

Covert's Saddlery Works.....60&10%

## Scales—

*Family, Turnbull's*.....30@30¢&10%
*Counter:*
*Hatch, Platform, ½ oz to 8 lbs. doz. $5.50*
*Two Platforms, ½ oz to 8 lbs. doz. $16*
*Union Platform, Plain...$1.70@1.90*
*Union Platform, Striped $1.85@2.15*
Chatillon's:
Eureka.....35%
Favorite.....40%
Grocers' Trip Scales.....50%
Pelouze Scales—Household, Counter, Candy, Ice, Postal, Computing.....50%
"The Standard" Portables.....45%
"The Standard" R. and Wagon....50%

## Scrapers—

*Box, 1 Handle*.....*doz $2.25@2.50*
*Box, 2 Handle*.....*doz. $3.75@4.00*
*Ship, No 1, doz. $3.50; No. 2, $2.25@2.40*
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10&10%
Chapin-Stephens Co., Box Scrapers.....50&5&10%

## Screens, Window, and Frames—

Bonanza Window Screens.....60@60&5%
Flyer Pattern Window Screen..60@60&5%
Maine Window Screen Frames.40&10&5%
Perfection Window Screens.....60@60&5%
Phillips' Window Screen Frames..... 60&10&5%
Porter's Hummer Window Screens. 60@60&5%
Porter's Klondike Window Screens..... 60&2½@60&7½%
Wabash Spring Adj. Screen.....50%
See also *Doors.*

## Screw Drivers—

See *Drivers, Screw.*

## Screws—Bench and Hand—

*Bench, Iron..doz, 1 in., $3.00@3.25;*
*1¼, $3.50@3.75; 1¼, $4.00@4.50*
*Bench, Wood, Beech..doz. $3.50@2.75*
*Hand, Wood*.....*30&5@40%*
Hand, R. Bliss Mfg. Co.....35%
Hand, Chapin-Stephens Co.....30@30&10%

## Coach, Lag and Hand Rail—

*Lag, Common Point, list Oct. 1, '99*.....*70¢&15@..%*
*Coach and Lag, Gimlet Point, list Oct. 1, '99*.....*70¢@10@..%*
*Hand Rail, list Jan. 1, '81.60¢@10@..%*

## Jack Screws—

*Standard List*.....*75@75¢&10%*
Millers Falls.....50¢&10&10%
Millers Falls, Roller.....50¢&10%
P., S.& W.....50¢&50&10%
Sargent.....70¢&10%

## Machine—

*List Jan. 1, '98.*
*Flat or Round Head, Iron.50@50¢&10%*
*Flat or Round Head, Brass50@50¢&10%*

## Set and Cap—

*Set (Iron or Steel)*.....*70%*
*Sq. Hd. Cap*.....*65%*
*Hex. Hd. Cap*.....*65%*
*Rd. or Fillister Hd. Cap*.....*60%*

## Wood—

*List Jan. 1, 1900.*
*Manufacturers' printed discounts:*
*Flat Head, Iron*.....*87½@90%*
*Round Head, Iron*.....*85@87½%*
*Flat Head, Brass*.....*85@87½%*
*Round Head, Brass*.....*82½@85%*
*Flat Head, Bronze*.....*75@80%*
*Round Head, Bronze*.....*72½@77½%*
*Drive Screws*.....*87½@90%*
NOTE.—*Extra 10&10&5% often given.*

## Scroll Saws—See *Saws, Scroll.*

## Scythes— *Per doz.*

*Clipper Pattern, Grass*.....*$4.25*
*Full Polished Clipper*.....*$4.75*
*Grain*.....*$7.00*
*Clipper, Grain*.....*$7.50*
*Wood and Bush*.....*$4.50*

## Scythe Snaths—

See *Snaths, Scythe.*

## Seeders— Raisin—

Enterprise.....25&30%

## Sets— Awl and Tool—

*Brad Awl and Tool Sets:*
*Wood Hdle..10 Awls doz. $2.00@2 25*
*Wood Hdle., 14 Awls, 6 Tools doz. $3.50@2.60*
Aiken's Sets, Awl and Tools:
No. 20, ₱ doz. $10.00.....50&10&10%
Fray's Adj. Tool H dls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders.....30&10%
Millers Falls Adj. Tool H'dls, No. 1, $13; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior:
No. 1, $7.50; No. 2 $4.00; No. 3, $5.50.....30@30&10&10%

## Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.... ₱ dos.....$9.00

## Nail—

*Square*.....*per gro. $3.50*
*Round, Blk. and Pol., assorted gro. $1.80@2.50*
*Octagon*.....*gro. $4.35@4.75*
*Knurled, Good*.....*gro. $6.00@6.50*
Buck Brothers.....27½%
Cannon's Diamond Point, ₱ gr. $19..25%
Mayhew's.....per gro. $9.00
Snell's Corrugated, Cup Pt. per gro. $7.50
Snell's Knurled, Cup Pt....per gro $7.50

## Rivet—

*Regular list*.....70@70¢&10¢&5%

## Saw—

Aiken's:
Genuine.....50&10%
Imitation.....50&10%
Atkin's.:
Criterion.....40%
Adjustable.....40%
Bemis & Call Co's.:
Cross Cut.....30%
Hammer, new Pat.....45%
Plate.....30%
Spring Hammer.....30%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $20.63.....50%
No. 5, Mill, $30.00.....50%
Nos. 10, 11, 95, $15.63.....50%
No. 1 Old Style, $10.00.....50%
Taintor Positive, ₱ doz. $18.....60%

## Sharpeners, Knife—

Chicago Wheel & Mfg. Co.....65%
Smith & Hemenway Co.....70&5%
Tanite Mills ₱ gross, $14.40....35@33⅓&5

## Sharpeners Skate—

Eureka Skate Sharpener.....₱ doz. $2.00

## Shaves Spoke—

*Iron*.....*doz. $1.00@1.25*
*Wood*.....*doz. $1.75@2.00*
Bailey's (Stanley R. & L. Co.) 50@50&10&10%
Chapin-Stephens Co.....50@50&10&10%
Goodell's, ₱ doz. $9.00.....15&10%
Wood's F1 and F2.....50%

## Shears—

| *Cast Iron...* | *7* | *8* | *9 in.* |
|---|---|---|---|
| *Best* | $16.00 | 18.00 | 20.00 *grc.* |
| *Good* | $13.00 | 15.00 | 17.00 *gro.* |
| *Cheap* | $5.00 | 6.00 | 7.00 *gro.* |

*Straight Trimmers, &c.:*
*Best quality, Jap*.....70@70¢&10%
" *Nickel*.....60@60¢&10%
*Fair qual. Jap*.....80@80¢&5%
" *Nickel*.....75@75¢&10%
*Tailors' Shears*.....40@40¢&10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....40%
Wilkinson's Hedge.....50%
Wilkinson's Sheep.....1900 list, 50%

## Tinners' Snips—

*Steel Blades*.....20¢&10%
*Steel Laid Blades*.....50¢&10%
Forged Handles, Steel Blades, Berlin.. 40@40&10%
Jennings & Griffin Mfg. Co's. 6½ to 10 inch.....40&7½&10%
Niagara Snips.....40%
P. S. & W. Co.....30%

## Pruning Shears and Tools—

Cronk's Grape Shears.....33⅓&5
Cronk's Pruning Shears.....33⅓&5
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 25@25&10%
John T. Henry Mfg. Company:
Pruning Shears, all grades..40@40&5%
Orange Shears.....50&10&50&20%
Grape.....40&10@50%
Tree Pruners.....75%
Nagley's Pruning Shears.....10&5%
Nagley's Tobacco Shears...₱ doz. $15.00
P. S. & W. Co.....33⅓&5

## Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller Hatfield's, Sargent's list, 70&10%
Reading.....70&10@75%
R. & E. list.....33⅓&5
Wrightsville, Hatfield Pattern.....80%

## Sliding Shutter—

Reading list.....70&10@75%
R. & E. list.....33⅓&5
Sargent's list.....50&10%

## Shells— Shells, Empty—

Brass Shells, Empty:
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge, 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic 10, 12, 16 and 20 gauge..25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, New Victor, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge.....50%
Climax, Union, League, New Rival 10 and 12 gauge.....25&5%
Climax, Union, League, New Rival, 14, 16 and 20 gauge ($7.50 list)..20%
Expert Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....33⅓&5%

## Shells, Loaded—

*Loaded with Black Powder*.....*40¢&5%*
*Loaded with Smokeless Powder, medium grade*.....*40¢&10%*
*Loaded with Smokeless Powder, high grade*.....*40¢&10¢&10¢&5%*

## Shoes, Horse, Mule, &c.—

*F. o. b., Pittsburg.*
*Iron*.....*per keg $3.60*

*Steel*.....*per keg 3.35*
Barden's, all sizes, ₱ keg.....$3.60

### Shot—
*Drop, up to B, 25-lb. bag*.....*$1.35*
*Drop, B and larger, per 25-lb. bag*.....*$1.60*
*Buck, 25-lb. bag*.....*$1.60*
*Chilled, 25 lb. bag*.....*$1.60*
*Dust Shot, 25-lb. bag*.....*$2.10*
Markle's Chilled.....$1.80
Raymond Chilled.....$1.80

### Shovels and Spades—
*Association list, March, 1902*.....*40%*

### Sieves and Sifters—
*Hunter's Imitation, gro. $11.00@11.50*
Buffalo Metallic Blued, S. S. & Co., ₱ gr.:

| 14&15 | 16&18 | 18&20 |
|---|---|---|
| $12.00 | $13.80 | $15.00 |

F. J. Meyers' Mfg. Co.:
Eclipse.....₱ gr. $11.00
Electric Light.....₱ gr. $11.00
Hunter's Genuine.....₱ gr. $12.50
No Name, Hunter's.....₱ gr. $11.00
Standard.....₱ gr. $11.00
Shaker (Barler's Pat.) Flour Sifters.
₱ doz., $2.00.....20%

### Sieves, Tin Rim—
*Per dozen*

| *Mesh* | 14 | 16 | 18 | 20 |
|---|---|---|---|---|
| *Black, full size* | $0.95 | .98 | 1.00 | 1.10 |
| *Plated, full size* | .$1.05 | 1.08 | 1.10 | 1.20 |
| *Black, scant* | | $0.78 | .80 | .83 |

### Sieves, Wooden Rim—
*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested, doz*.....*$0.65@0.75*
*Mesh 20, Nested, doz*.....*.75@ .85*
*Mesh 24, Nested, doz*.....*.90@1.00*

### Sinks—
#### Cast Iron—
*Standard list*.....*65@70%*
NOTE.—*There is not entire uniformity lists used by jobbers.*

#### Wrought Steel—
New Era, Galv'd and Enameled..70&5%
New Era, Painted.....50&10%
L. & G. Mfg. Co., Galvanized.....50%
L. & G. Mfg. Co. Enameled.....50%

### Skeins, Wagon—
*Cast Iron*.....*70@10@75%*
*Malleable Iron*.....*40@10@50%*
*Steel*.....*40@40&10%*

### Slates—
*Factory Shipments.*
*"D" Slates*.....*50@10@10@10%*
*Unexcelled, etc., Noiseless Slates*..*60 @ 8 tens %*
*Victoria, etc., Noiseless Slates*..*60@ 7 tens @5%*
*Wire Bound*.....*50@10@5%*
*Web Hinge*.....*50%*

### Slaw Cutters—See *Cutters.*
### Slicers, Vegetable—
Sterling $2.00.....33⅓

### Snaps, Harness—
*German*.....*40@40@10%*
Covert Mfg. Co.:
Decoy.....35&2%
High Grade.....45&2%
Jockey.....40&2%
Trojan.....45&2%
Yankee.....35&2%
Yankee, Roller.....30&2%
Covert's Saddlery Works:
Crown.....60%
German.....60%
Model.....60%
Triumph.....60%
W. & E. T. Fitch Co.:
Bristol.....40&10%
Empire.....50&5%
German.....40%
National.....50&5%
Perfect.....45%
Clipper.....50&5%
Champion.....40%
Security.....40%
Victor.....60&5%
Oneida Community:
Solid Steel.....60&5%
Solid Swivel.....60%
Sargent's Patent Guarded.....60%&10%

### Snaths—
*Scythe*.....*50@50&10%*

### Snips, Tinners'—See *Shears.*
### Soldering Irons—
See *Irons, Soldering.*

### Spoke Trimmers—
See *Trimmers, Spoke.*

### Spoons and Forks—
#### Silver Plated—
*Good Quality*.....*50@10@60@10@5%*
*Cheap*.....*60@60@10%*
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton.....40&10%
Rogers & Bro., William Rogers Eagle Brand.....50&10%
Anchor, Rogers Brand.....60%
Wm. Rogers & Son.....60&10%
Simeon L. & Geo. H. Rogers Co.:
Silver Plated Flat Ware.....60%
No. 77 Silver Plated Ware.....60&10%

### Miscellaneous—
*German Silver*.....*60@10@60@10@10%*
Cattaraugus Cutlery Co.:
Yukon Silver.....50%
Simeon L. & Geo. H. Rogers Co.:
German or Nickel Silver, Special list.....1.&10%

### Tinned Iron—
*Teas*.....*per gro. 45@5.c*
*Tables*.....*per gro. 90c@$1.00*

### Springs—
#### Door—
Gem (Coil).....20%
Star (Coil).....30%
Torrey's Rod, 39 in.....₱ doz. $1.10
Victor (Coil).....59&10&10%

### Carriage, Wagon, &c.
*1¼ in. and Wider:*
*Black or ½ Bright, lb*.....*5 c*
*Bright, lb*.....*5½c*
*Painted Seat Springs:*
*1½ x 2x 26 and smaller, per pr 48@53c*
*1½ x 2 x 28 per pr*.....*56@61c*
*1¼ x 3 x 28 and narrower, per pr*.....*75@90c*
Cliff's Springs:
Bolster.....40%
Seat.....per pair 50c
Pole, per pair, ⅝ in. $1.10; ¾ in. $1.25

### Sprinklers, Lawn—
Enterprise.....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%

### Squares—
*Nickel plated*.....*List Jan. 5, 1900.*
*Steel and Iron*.....*70&10%*
*Rosewood Hdl Try Square and T-Bevels*.....*60@10@10@10%*
*Iron Hdl. Try Squares and T-Bevels.*.....*50@10@40@10@10%*
Disston's Try Sq. and T-Bevels.....60&10%
Winterbottom's Try and Miter.....40&10@40&10&10%

### Squeezers—
#### Lemon—
*Wood, Common, gro., No. 0, $5.25 @5.50; No. 1, $6.25@$6.50.*
*Wood, Porcelain Lined,*
*Cheap*.....*doz. $2.00@2.75*
*Good Grade*.....*doz. $3.00@3.50*
*Tinned Iron*.....*doz. $0.75@1.25*
*Iron, Porcelain Lined doz. $2.90@3.25*

### Staples—
*Barbed Blind*.....*lb. 6@6½c*
*Electricians', Association list*.....*80@10&10%*
*Fence Staples, same price as Barbed Wire. See Trade Report.*
*Poultry Netting, Staples*.....*per lb.*.....*3¼@3¾c*
Grand Crossing Tack Co.'s list.....80&10%

### Steels, Butchers'—
Dick's.....30%
Foster Bros'.....30%
Hartzell Cutlery Co.....30&5%
C. & A. Hoffmann's.....40%

### Steelyards.....25@25@10%

### Stocks and Dies—
*Blacksmiths'*.....*40@40@10%*
Gardner Die Stocks No. 1.....50%
Gardner Die Stocks, larger sizes.....40%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%
Curtis Reversible Ratchet Die Stock.25%

### Stone—
#### Scythe Stones—
Chicago Wheel & Mfg. Co:
Gem Corundum, 10 inch, $8.00 per gro., 12 inch, $10.80
Pike Mfg. Co. 1901 list:

| | | |
|---|---|---|
| Black Diamond S. S. | ₱ gro. $12.00 | 33⅓ |
| Lamoille S. S. | ₱ gro. $11.00 | |
| White Mountain S. S. | ₱ gro. $9.00 | |
| Green Mountain S. S. | ₱ gro. $6.00 | |
| Extra Indian Pond S. S. | ₱ gro. $7.50 | |
| No. 1 Indian Pond S. S. | ₱ gro. $7.00 | |
| No. 2 Indian Pond S. S. | ₱ gro. $4.50 | |
| Leader Red End S. S. | ₱ gro. $4.50 | |

Balance of 1901 list 33⅓%

#### Oil Stones, &c.
Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit.....50%
Gem Corundum Axe, Single or Double Grit.....35%
Gem Corundum Slips.....55%
Gem Corundum Razor Hones.....50%
Pike Mfg. Co. 1901 list:

| | | |
|---|---|---|
| Arkansas Stone, No. 1, 3 to 5½ in. | ₱ lb $2.80 | 25% |
| Arkansas Stone, No. 1, 5½ to 8 in. | $3.50 | |
| Arkansas Slips No. 1 | $4.00 | |
| Lily White Washita 4 to 8 in. | .60 | |
| Rosy Red Washita, 4 to 8 in. | .60 | |
| Washita Stone, Extra, 4 to 8 in. | .50 | |
| Washita Stone, No. 1, 4 to 8 in. | .40 | |
| Washita Stone, No. 2, 4 to 8 in. | .30 | |
| Lily White Slips | .90 | |
| Rosy Red Slips | .90 | |
| Washita Slips, Extra | .80 | |
| Washita Slips, No. 1 | .70 | |

India Oil Stones (entire list).....25%

| | | |
|---|---|---|
| Hindostan No. 1, Regular | ₱ lb 8¢ | 33⅓% |
| Hindostan No. 1 Small | ₱ lb 10¢ | |
| Axe Stones (all kinds) | | 33⅓% |
| Turkey Oil Stones, ex. 5 to 8 in. | ₱ lb 80¢ | 33⅓% |
| Queer Creek Stones, 4 to 8 in. | .20¢ | |
| Queer Creek Slips | .10¢ | |
| Sand Stone | .5¢ | .40% |
| Belgian, German and Swaty Razor Hones | | .40% |
| Natural Grit Carving Knife Hones, ₱ doz. | $3.00 | 33⅓% |
| Quick Edge Pocket Knife Hones, ₱ doz. | $3.00 | |
| Mounted Kitchen Sand Stone, ₱ doz. | $1.50 | |

Tanite Mills:
Emery Oil, ₱ doz. $5.00.....50@60%

### Stoners—
#### Cherry—
Enterprise.....25@30%

### Stops, Bench—
Millers Falls.....15&10%
Morrill's, ₱ doz., No. 1, $10.00.....50%
Morrill's, No. 2, $12.50.....50%
#### Plane—
Chapin-Stephens Co.....20%
#### Window—
Ives' Patent.....25&5%

### Stove Boards—
See *Boards, Stove.*

### Stove Polish—See *Polish, Stove.*

### Strainers, Pump—
Diamond Joe Pump Strainers..per doz. 75¢

### Straps—
#### Box—
Cary's Universal, case lots.....20&10%
#### Hame—
Covert's Saddlery Works.....60&10%

### Stretchers, Carpet—
*Cast Iron, Steel Points*.....*doz. 55@65c*
*Socket*.....*doz. $1.75*

### Strops, Razor—
Smith & Hemenway Co.....70%

### Stuffers, Sausage—
Enterprise Mfg. Co.....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....30%

### Sweepers, Carpet—

| National Sweeper Co.: | Per doz. |
|---|---|
| Marion, Roller Bearing, regular finishes, full Nickel | $24.00 |
| Marion Queen, Roller Bearing, Fancy Veneers, full Nickel | $27.00 |
| Monarch, Roller Bearing, Nickel | $22.00 |
| Monarch, Roller Bearing, Japanned | $21.00 |
| Marion Queen, Roller Bearing, Regular Finishes, full Nickel | $24.00 |
| Transparent, Roller Bearing, Plate Glass Top, Nickel | $32.00 |
| Monarch Extra, Roller Bearing, (17-inch case), Nickel | $36.00 |
| Monarch Extra, Roller Bearing (17-inch case), Japanned | $33.00 |

Perpetual, Regular Bearings, Nkl. $20.00
Perpetual, Regular Bearings, Jap. $14.00
NOTE.—*Discount of 50c per dozen on three-dozen lots. Discount of $1 per dozen on five-dozen lots.*

### Tacks Brads, &c.—
*List Jan. 15, '99.*
*Carpet Tacks, American*.....*90@25@....%*
*American Cut Tacks*.....*90@20@....%*
*Swedes Iron Tacks*.....*90@30@....%*
*Swedes Upholsterers' Tacks*.....*90@40@....%*
*Gimp Tacks*.....*90@50@....%*
*Lace Tacks*.....*90@40@....%*
*Trimmers' Tacks*.....*90@25@....%*
*Looking Glass Tacks*.....*70@10%*
*Bill Posters' and Railroad Tack*.....*90@40@....%*
*Hungarian Nails*.....*80@15%*
*Common and Patent Brads*.....*80@10%*
*Trunk and Clout Nails*.....*80@5%*
NOTE.—*The above prices are for Straight Weights.* An extra 5% is given Star Weights** and an extra 10@5% on Standard Weights.****

#### Miscellaneous—
*Double Point Tacks*.....*90@6 or 7 tens*
*Steel Wire Brads, R. & E. Mfg. Co.'s list*.....*50@10@60%*
**See also** *Nails, Wire.*

### Tanks, Oil—
Emerald, S. S. & Co.....30-gal. $3.20
Emerald, S. S. & Co.....60-gal., $4.00
Queen City S. S. & Co., 30-gal.....$3.50
Queen City S. S. & Co., 60-gal.....$4.25

### Tapes, Measuring—
*American Asses' Skin*.....*40@10@30%*
*Patent Leather*.....*25@30@5%*
*Steel*.....*40@40@5%*
*Chesterman's*.....*25@25@5%*
Eddy's Steel.....40@40&5%
Eddy's Metallic.....33⅓@33⅓&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic.....30@30&5%

### Teeth, Harrow—
*Steel Harrow Teeth, plain or headed, base per lb*.....*2¼c*

### Thermometers—
*Tin Case*.....*80@10@80@10@5%*

### Ties, Bale—Steel Wire.
*Single Loop*.....*80@80@10%*
*Improved, Monitor, Cross Head, Etc*.....*70%*

### Ties, Wall—
Cleveland Wire Spring Co.:
Galv. Steel 5-32 x 6¼ in. ₱ 1000.$10.00
Galv. Steel 5-32 x 8½ in. ₱ 1000.$11.00
Galv. Steel 5-32 x 11¼ in. ₱ 1000.$12.00
Galv. Steel 5-32 x 15½ in. ₱ 1000.$14.00

### Tinners' Shears, &c.—
See *Shears, Tinners', &c.*

### Tinware—
Stamped, Japanned and Pieced, sold very generally at net prices.

### Tips, Safety Pole—
Covert's Saddlery Works.....60&10%

### Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

### Tobacco Cutters—
See *Cutters, Tobacco.*

### Tools—
#### Coopers'—
L. & I. J. White.....20@20&5%
#### Saw—
Atkins' Cross Cut Saw Tools.....40%
Simonds' Improved.....33⅓%
Simonds' Crescent.....25%
#### Ship—
L. & I. J. White.....25%

### Transom Lifters—
See *Lifters, Transom.*

### Traps—
#### Fly—
*Balloon, Globe or Acme*.....*doz. $1.15@1.25; gro. $11.50@12.00*
*Harper, Champion or Paragon doz. $1.25@1.50; gro. $13.00@13.50*
#### Game—
*Oneida Pattern*.....*75¢10¢5@80¢5%*
Newhouse.....45@45&5%
Hawley & Norton.....65&5@65&10%
Victor (Oneida Pattern).....75@75&5%
Star (Blake Pattern).....60&5@60&10%
#### Mouse and Rat—
*Mouse, Wood, Choker, doz. holes*.....*8½@9c*
*Mouse, Round or Square Wire*.....*doz. $0.85@1.00*
American Pattern French Rat and Mouse Traps—
No. 1, Detroit Marty Pattern, ₱ doz. $4.50; in ½ gro. lots, ₱ doz.....$4.00
No. 2, Detroit Marty Pattern, ₱ doz. $3.25; in ½ gro. lots, ₱ doz.....$3.00
Detroit Marty Pattern Mouse, ₱ doz. $2.00; in ½ gro. lots, ₱ doz.....$1.75
Diamond Joe Mouse Traps.....per doz. 60¢
Diamond Joe Rat Traps.....per doz. $1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½; ₱ doz. $12.00
No. 3, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 72 $3.75 doz.
No. 5, Mouse, ₱ doz. $2.75; case of 150 $2.25 doz.
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00; No. 2, ₱ gr. $30.00; Mouse, No. 3, $18.00.....50%

### Target—
Markle's, each.....$5.50

### Trimmers, Spoke—
Bonney's Nos. 1 and 2.....40%
Wood's R 1.....50%

### Trowels—
Disston Brick and Pointing.....30%
Disston Plastering.....25%
Disston "Standard Brand" and Garden Trowels.....40%
Never-Break Steel Garden Trowels.....gro. $7.00
Peace's Plastering.....30%
Rose Brick and Plastering.....25&5%
Woodrough & McParlin, Pl'st'ring.....25%

### Trucks, Warehouse, &c.—
B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks.....per doz. $16.00
Grocery.....per doz. $15.00
Daisy Stove Trucks, Improved pattern ₱ doz. $18.50
Model Stove Trucks.....₱ doz. $18.50

### Tubs, Wash—

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Galvanized, per doz.* | *$5.00* | *5.50* | *6.00* |

Galvanized Wash Tubs (S. S. & Co.):

| No. | 1 | 2 | 3 | 10 | 20 | 30 |
|---|---|---|---|---|---|---|
| Per doz. | $5.25 | 6.00 | 6.75 | 6.50 | 7.25 | 8.00 |

### Twine—
#### Miscellaneous—

| | BC | B. |
|---|---|---|
| *Flax Twine—* | | |
| *No. 9, ¼ and ½-lb. Balls* | *21½c* | *23½c* |
| *No. 12, ¼ and ½ lb. balls* | *17½c* | *19½c* |
| *No. 18, ¼ and ½-lb. Balls* | *15½c* | *17½c* |
| *No. 24, ¼ and ½-lb. Balls* | *15 c* | *17 c* |
| *No. 36, ¼ and ½-lb. Balls* | *14½c* | *16½c* |

*Chalk Line, Cotton, ½-lb Balls*.....*22@22½c*
*Cotton Mops, 6, 9, 12 and 15 lb. to doz*.....*7@8c*
*Cotton Wrapping 5 Balls to lb according to quality*.....*11c@17c*
*American 2-Ply Hemp, ¼ and ½-lb. Balls*.....*15@15c*
*American 3 Ply Hemp, 1-lb. Balls*..*13@13c*
*India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)*.....*7½c*
*India 3-Ply Hemp, 1-lb. Balls*.....*7½c*
*India 3-Ply Hemp, 1½-lb. Balls*..*6½c*
*2, 3, 4 and 5-Ply Jute, ½-lb. Balls*...*8@9c*
*Mason Line, Linen, ½-lb. Balls*...*45c*
*No. 264 Mattress, ¼ and ½-lb. Balls.37c*
*Wool, 3 to 6 ply*.....*6c*

### Vises—
*Solid Box*.....*50@50&10%*

#### Parallel—
Athol Machine Co.:
Simpson's Adjustable.....40%
Standard.....40%
Amateur.....40%
Bonney's.....40%
Columbian Hdw. Co.....40%
Fisher & Norris Double Screw....15&10%
Hollands':
Machinists'.....40%
Keystone.....65&5%
Lewis Tool Co.....20@30%
Massey's Perfect.....15@20%
Massey's:
Clincher.....30@40%
Combination, Quick Adj.....40%
Woodworker's.....15%
Merrill's.....20%
Miller's Falls.....50&10&10%
Parker's:
Victor.....20@25%
Regulars.....20@25%
Vulcan's.....40@45%
Combination Pipe.....55@60%
Prentiss.....20@25%
Sargent's.....40%
Snediker's X. L.....33⅓%
Stephens'.....33⅓%

### Saw Filers—
Bonney's, No. 1, $13; No. 3, $16.....50%
Disston's D 3 Clamp and Guide, ₱ doz. $30.....25%
Reading.....60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....45&50%

#### Miscellaneous—
Bignall & Keeler Combination Pipe Vise.....60%
Parker's Combination Pipe:
87 Series.....60%
187 Series.....60&5%
No. 870.....40%

### Wads—Price Per M.

| | |
|---|---|
| *B. E., 11 up* | *.60c* |
| *B. E., 9 and 10* | *.70c* |
| *B. E., 8* | *.80c* |
| *B. E., 7* | *.80c* |
| *P. E., 11 up* | *$1.00* |
| *P. E., 9 and 10* | *1.25* |
| *P. E., 8* | *1.50* |
| *P. E., 7* | *1.50* |
| *Ely's B E., 11 and larger* | *$1.70@1.75* |
| *Ely's P. E., 12 to 20* | *$3.00@3.25* |

*Dis. 15%*

### Wagon Jacks—
See *Jacks, Wagon.*

### Ware, Hollow—
Aluminum—
S. S. & Co. Reduced List.....40%
#### Cast Iron, Hollow—
*Stove Hollow Ware:*
*Ground*.....*65%*
*Unground*.....*70%*
*White Enameled Ware:*
*Maslin Kettles*.....*70@10@7½%*
*Covered Ware:*
*Tinned and Turned*.....*40@10@10@5%*
*Enameled and Plain*.....*50@50@10@5%*
**See also** *Pots, Glue.*

#### Enameled—
Agate Nickel Steel Ware, list Nov. 1, '01.....50@20%
Iron Clad Ware.....70@10%
Never Break Enameled....50@5@50@10%

#### Tea Kettles—
*Galvanized Tea Kettles:*

| *Inch* | *6* | *7* | *8* | *9* |
|---|---|---|---|---|
| *Each* | *45c* | *50c* | *55c* | *65c* |

#### Steel Hollow Ware.
Avery Spiders & Griddles.....65@65&5%
Avery Kettles.....90%
Porcelained.....50@5@50@10%
Never Break Spiders and Griddles.....65&5%

Never Break Kettles.....60%
Solid Steel Spiders & Griddles.....65&5%
Solid Steel Kettles.....60%
Solid Steel Ware, Enameled.....50&5%

### Washboards—

Solid Zinc: ₩ doz
Crescent, family size, bent frame.$3.00
Red Star, family size, stationary protector.....$3.00
Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$2.65
Cable Cross, family size, stationary protector.....$2.40
Single Zinc Surface:
Nalad, family size, open back perforated.....$2.40
Saginaw Globe, protector, family size, ventilated back.....$2.25
Brass Surface:
Brass King, Single Surface, open back.....$3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.00

### Washers—

### Leather, Axle—

*Solid*.....85&10&10@85&10&10&10%
*Patent*.....85&10@85&20%
*Coil:* ⅞ 1 1⅛ 1¼ Inch.
10c 11c 12c 13c per 100

### Iron or Steel—

*Size bolt*.... 5-16 ⅜ ½ ⅝ ¾
*Washers*....$5.50 5.00 3.70 3.50 3.30
*In lots less than one keg add ½c per lb., 5-lb. boxes add ½c to list.*

### Cast Washers—

*Over ½ inch, barrel lots, per lb.*.....
1½@1¾c

### Washer Cutters—

See *Cutters, Washer.*

### Washing Machines—

See *Machines, Washing.*

### Water Coolers—

See *Coolers, Water.*

### Wedges—

*Oil Finish*.....*lb. 2.90@3.10c*

### Weights—

### Hitching—

Covert's Saddlery Works.....60&10%

### Sash—

*Per ton, f.o.b. factory:*
*Eastern District*.....$20.00@21.00
*Western, Central and Southern Districts*.....$22.50@23.00

### Well Buckets, Galvanized

See *Pails, Galvanized.*

### Wheels, Well—

*8-in.. $1.55@1.65; 10-in., $1.75@3.00; 12-in., $2.35@2.50; 14-in., $3.50@3.75*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9*.....72½&c5@72½&c10%
*10 to 18*.....72½&10@72½&10&c5%
*19 to 26*.....75&10&c2½@75&10&c7½%
*27 to 36*.....75&c10&c7½@80&c2½%
*Galvanized:*
*6 to 18*.....70@70&c5%
*19 to 26*.....72½&c5@72½&c10%
*27 to 36*.....72½&10@72½&10&c5%
*Coppered:*
*6 to 9*.....70&c5@70&c10%
*10 to 18*.....70&10@70&10&c5%
*19 to 26*.....75&c7½@75&10&c2½%
*27 to 36*.....75&10@75&10&c5%
*Tinned:*
*6 to 14*.....75@75&c7½%
*15 to 18*.....72½&c5@75%
*19 to 26*.....70&c5@70&c5%
*27 to 36*.....70@70&c5%
*Annealed Wire on Spools*..70&c5@70 &c10%
*Brass and Copper Wire on Spools.*
60&c5@60&c10%
*Brass, list Feb. 26, '96*.....5%
*Copper, list Feb. 26, '96*.....15%
*Cast Steel Wire*.....50%
*Stubs' Steel Wire*.....$6.00 to £. 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

### Bright Wire Goods—

*List April 1, 1901*.....85&10%

### Wire Cloth and Netting—

*Galvanized Wire Netting*..80&c20@85%
*Painted Screen Cloth per 100 ft*..$1.10
*Light Hardware Grade:*
*2-18 Mesh, Plain (8c. list) sq. ft*..
1⅛@1¾c
*2-18 Mesh, Galv. (8c. list) sq ft*.2¼@2¾c

### Wire, Barb—See *Trade Report.*

### Wire Rope—See *Rope, Wire.*

### Wrenches—

*Agricultural*..... 70&c10@75&c5%
*Case lots*.....75&c10%
Acme.....60&10%
Alligator.....70%
Baxter's S.....60&10%
Bull Dog.....70%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&5%
Combination Bright.....40%
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....55%
Bindley Automatic.....30%
Boardman's.....33⅓%
Coes' Genuine.....40&10&5&5%
Coes' "Mechanics'".....40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Elgin Wrenches.....40%
Elgin Monkey Wrench Pipe Jaws..33⅓%
Gem Pocket.....30%
Hercules.....70%
Knife Handle, Machinists' (W. & B.):
Case lots.....50&10%
Less than case lots.....50&5%
Improved Pipe (W. & B.).....60%
Solid Handles, P.S. & W .....50@50&5%
Stillson.....65%
Triumph.....60&10%
Vulcan Chain.....50%

### Wrought Goods—

*Staples, Hooks, &c., list March 17 '92*.....90@90&c10%

### Yokes Neck—

Covert Saddlery Works, Trimmed....70%
Covert Saddlery Works, Neck Yoke Centers.....70%

### Yokes, Ox, and Ox Bows—

Fort Madison's Farmers & Freighters'.. list net

### Zinc—

*Sheet*.....*lb 6¼c@6¾c*

## PAINTS, OILS AND COLORS—Wholesale Prices.

### White Lead, Zinc, &c.

Lead, English white, in Oil.... 7½@ 9⅜
Lead, American White, in Oil:
Lots of 500 ℔ or over..... @ 6
Lots less than 500 ℔..... @ 6⅛
Lead, White, in oil, 25 ℔ tin pails, add to keg price..... @ ⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price..... @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.. @ 1¼
Lead White, Dry in bbls..... 5½@ 6
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry.....₩ ℔ 4⅜@ 4⅝
Zinc, Paris, Red Seal, dry..... @ 8⅝
Zinc, Paris, Green Seal, dry.... @ 9⅛
Zinc, Antwerp Red Seal, dry... @ 6½
Zinc, Antwerp, Green Seal, dry .. @ 8⅝
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over.....12 @12½
Lots of less than 1 ton.....12¼@12¾
Zinc, V. M French, in Poppy Oil, Red Seal:
Lots of 1 ton and over.....10¾@11¼
Lots of less than 1 ton.....11@11¼
Discounts.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

### Dry Colors.

Black, Carbon.....₩ ℔ 5 @ 8
Black, Drop, Amer..... 4 @ 7
Black, Drop, Eng..... 7 @11
Black, Ivory.....12 @21
Lamp, Com..... 4½@ 6
Blue, Celestial.....₩ ℔ 4 @ 6
Blue, Chinese.....30 @35
Blue, Prussian.....28 @34
Blue, Ultramarine..... 4 @20
Brown, Spanish..... ½@ 1
Brown, Vandyke, Amer..... 1¾@ 2½
Brown, Vandyke, Foreign..... 2½@ 3½
Carmine, No. 40.....₩ ℔$2.05@2.75
Green, Chrome, ordinary..... 5 @ 6½
Green, Chrome, pure.....19 @20
Lead, Red, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over..... @ 5½
Lots less than 500 ℔..... @ 6
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over..... @ 5½
Lots less than 500 ℔..... @ 6
Ocher, French Washed..... 1¾@ 1¾
Ocher, Dutch Washed..... 4¾@ 5
Ocher, American....₩ ton$10.00@15.00
Orange Mineral, English..₩ ℔ 8½@10½
Orange Mineral, French.....11½@ ...
Orange Mineral, German..... 8½@10½
Orange Mineral, American .... 7½@ 8
Red, Indian, English..... 4½@ 8½
Red, Indian, American ..... 3 @ 3½
Red, Turkey, English..... 4 @ 6
Red, Tuscan, English..... 7 @10
Red, Venetian, Amer..₩ 100 ℔. 50@1.50
Red Venetian, English.₩100 ℔.1.80@2.00
Sienna, Italian, Burnt and Powdered.....₩ ℔ 3½@ 7½
Sienna, Ital., Raw, Powd..... 3½@ 7½
Sienna, American, Raw..... 1½@ 2
Sienna, American, Burnt and Powdered.....₩ ℔ 1½@ 2
Talc, French.....₩ 100 ℔ $1.25@1.50
Talc, American.....90 @1.10
Terra Alba, French, ₩ 100 ℔ . 95 @1.00
Terra Alba, English.....95 @1.00
Terra Alba, American No. 1....65 @85
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt.& Pow.₩ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer..... 1½@ 2
Umber, Raw, Amer..... 1½@ 2
Yellow, Chrome.....10½@25
Vermilion, American Lead....10 @40
Vermilion, Quicksilver, bulk.... @70
Vermilion, Quicksilver, bags.... @71
Vermilion, English, Import... 80 @95
Vermilion, Chinese..... .$1.05@1.20

### Colors in Oil.

Black, Lampblack..... 12 @14
Blue, Chinese..... .....36 @40
Blue, Prussian.....32 @36
Blue, Ultramarine.....13 @16
Brown, Vandyke..... 9½@13
Green, Chrome..... 10 @12
Green, Paris..... @24
Sienna, Raw..... 10 @13
Sienna, Burnt..... 10 @13
Umber, Raw..... 9½@12
Umber, Burnt..... 9½@12

### Miscellaneous.

Barytes, Foreign, ₩ ton....$19.00@21.00
Barytes, Amer. floated..... 19.00@20.00
Barytes, Crude, No. 1..... 9.00@10.00
Chalk, in bulk.....₩ ton 2.50@ 2.60
Chalk, in bbls.....₩ 100 ℔ ..@ 35
China Clay, English..₩ ton 12.00@17.50
Cobalt, Oxide.....₩ 100 ℔ 2.26@ 2.50
Whiting, Common. ₩ 100 ℔ .40@ .60
Whiting, Gilders..... .45@ .65
Whiting, extra Gilders'.... .55@ .68

### Putty.

In bladders.....$2.25
In bulk..... 2.25
In cans, 1 ℔ to 5 ℔..... 3.25
In cans 12 ℔ to 25 ℔..... 2.25

### Spirits Turpentine.

In Southern bbls..... 48¼@49 ¢
In machine bbls..... 49 @49½ ¢

### Glue.

Cabinet.....₩ ℔ 11½@16
Extra White.....18 @23
French..... 12 @40
Irish..... 13½@16
Low Grade..... 9 @12
Medium White..... 14½@16½

### Animal, Fish and Vegetable Oils.

Linseed, City, raw.....₩ gal..67 @68
Linseed, City, boiled..... 69 @70
Linseed, State and West'n, raw.65 @67
Linseed, raw Calcutta seed..... @85
Lard, Prime..... 79 @80
Lard, Extra No. 1..... .65 @68
Lard, No. 1..... 58 @62
Cotton-seed, Crude..... @ ..
Cotton-seed, Summer Yellow, prime.....44½@45
Cotton-seed Summer Yellow, off grades..... .43 @44
Sperm, Crude..... @ ..
Sperm, Natural Spring..... 71 @73
Sperm, Bleached Spring..... 74 @76
Sperm, Natural Winter..... 75 @77
Sperm, Bleached Winter..... 78 @80
Tallow, Prime..... 62 @64
Whale, Crude..... @ ..
Whale, Natural Winter..... 46 @47
Whale, Bleached Winter..... 48 @49
Menhaden, Crude, Sound..... @ ..
Menhaden, Light Strained..... 32 @33
Menhaden, Bleached Winter... 34 @35
Menhaden, Ex Bleached Winter 36 @37
Cocoanut, Ceylon..... 7¼@ 7¾
Cocoanut, Cochin..... 8 @ 8¼
Cod, Domestic..... 33 @34
Cod, Newfoundland..... 36 @40
Red Elaine..... @42
Red Saponified.....₩ ℔ 6½@ 7
Olive, Italian, bbls..... 52 @ 54
Neatsfoot, prime..... 60 @65
Palm, prime, Lagos.....₩ ℔ 5¾@ 6

### Mineral Oils.

Black, 30 gravity, 25@30 cold test.....₩ gal. 9¾@ 10¼
Black, 29 gravity, 15 cold test. 10¾@ 11¼
Black, summer..... 9¼@ 9¾
Cylinder, light filtered..... 14¾@17¾
Cylinder, dark filtered..... 11¼@15¾
Paraffine, 903-907 gravity..... 12¾@12¾
Paraffine, 903 gravity..... 11¾@11¾
Paraffine, 883 gravity..... 9¼@10
Paraffine, red, No. 1..... 12¼@12¾
In small lots ¼¢ advance.


# THE IRON AGE

*The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.*

ISSUED EVERY THURSDAY MORNING.

Subscription, postpaid, to all parts of the world, $5.00 a year.

Two Dollar Edition, $2.00 a year; Dollar Edition, $1.00 a year, to the United States, British America Mexico, Hawaii, Cuba, Philippine Islands. Other Countries: Two Dollar Edition, $2.50; One Dollar Edition, $1.25

ADVERTISING RATES:

One Inch, one insertion, $3.00; One month (5 times), $11.25; Three months, $26.25; Six months, $45.00; One year, $75.00. Rates for larger spaces quoted on application.

**New York (Main Office),** - 232-238 William Street, - - - - - DAVID WILLIAMS CO., Pub'rs
**Philadelphia,** - - - - Forrest Building, 117-119 South Fourth Street, - Thomas Hobson, Manager.
**Pittsburgh,** - - - - - Park Building, 357 Fifth Avenue. - - - Robert A. Walker, Manager.
**Chicago,** - - - - - Fisher Building, Dearborn and Van Buren Streets, H. H. Roberts, Business Manager.
**Cincinnati,** - - - - - Pickering Building, Fifth and Main Streets, - Henry Smith, Manager.
**St. Louis,** - - - - - Chemical Building, 721 Olive Street, - - - James T. Newell, Manager.
**Boston,** - - - - - Mason Building, 70 Kilby Street, - - - Walter C. English, Manager.
**Cleveland,** - - - - The Cuyahoga, 311 Superior Street, - - - Ezra S. Adams, Manager.

**LONDON OFFICE:** Hastings House, Norfolk Street, Strand.
...; Melbourne, Hardware Chambers, 231 Elizabeth Street; Sydney, Palings Building.

...aft, payable to the order of David Williams Company, on any banking house in the United States or ... Money Order on New York. When these cannot be obtained, postage stamps of any country will be ...

...f the world may obtain *The Iron Age* through the American News Company, New York, U. S. A.; ... S. A., and London, England; or The San Francisco News Company, San Francisco, Cal., U. S. A.

... the Post Office, New York, as Second-Class Matter.

# CURRENT METAL PRICES.

JUNE 25, 1902.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report

## IRON AND STEEL—

### Bar Iron from Store—

Refined Iron:
1 to 1⅛ in. round and square, 1¼ to 4 in. x ⅜ to 1 in. ₩ ₤ 2.15@2.20¢
1½ to 4 in. x ¼ to 5-16 ₩ ₤ 2.20@2.30¢
Rods—⅜ and 11-16 round and square. ₩ ₤ 2.40@2.50¢

| Angles: | Cts ₩ ₤ |
|---|---|
| 3 in. x ¼ in. and larger | 2.75@3.00¢ |
| 3 to 3½ in. x 3-16 in. | 2.85@3.00¢ |
| 1½ to 3 in. x ⅛ in. | 3.00¢ |
| 1½ to 2½ in. x 3-16 in. and thicker | 2.70¢ |
| 1 to 1¼ in. x 3-16 in. | 2.80¢ |
| 1 to 1¼ x ⅛ in. | 2.80¢ |
| ⅞ x ⅛ in. | 3.00¢ |
| ⅝ x ⅛ in. | 3.10¢ |
| ⅝ x ⅛ in. | 3.70¢ |
| ½ x 3-32 in. | 4.50¢ |
| Tees: | |
| 1 in. | 3.20¢ |
| 1¼ in. | 3.10¢ |
| 1½ in. and larger | 3.00@3.25¢ |
| Beams | 3.00@3.25¢ |
| Channels, 3 in. and larger | 3.00@3.25¢ |
| Bands—1½ to 6 x 3-16 to No. 8 | ₩ ₤ 2.40¢ |
| "Burden's Best" Iron, base price | ₩ ₤ 3.30¢ |
| Burden's "H. B. & S. Iron, base price | ₩ ₤ 3.10¢ |
| "Ulster" | ₩ ₤ 3.15¢ |
| Norway Bars | 3.75@4.25¢ |
| Norway Shapes | 4.00@4.50¢ |

### Merchant Steel from Store—

| | per ₤ |
|---|---|
| Bessemer Machinery | 2.10 to 2.20¢ |
| Toe Calk, Tire and Sleigh Shoe | 2.30@3.00¢ |
| Best Cast Steel, base price in small lots | 7½¢ |

### Soft Steel Sheets—

| | | | |
|---|---|---|---|
| ¼ inch | 2.40¢ | No. 14 | 3.00¢ |
| 3-16 inch | 2.50¢ | No. 16 | 3.10¢ |
| No. 8 | 2.60¢ | No. 18 | 3.50¢ |
| No. 10 | 2.70¢ | No. 20 | 3.50¢ |
| No. 12 | 2.90¢ | No. 22 | 3.60¢ |

### Sheet Iron from Store.

#### Black.

| | One Pass, C. R. Soft Steel | R. G. Cleaned. |
|---|---|---|
| Nos. 14 to 16 | ₩ ₤, 3.35 | 3.40¢ |
| Nos. 18 to 21 | ₩ ₤, 3.45 | 3.50¢ |
| Nos. 22 to 24 | ₩ ₤, 3.50 | 3.60¢ |
| Nos. 25 and 26 | ₩ ₤, 3.60 | 3.70¢ |
| No. 27 | ₩ ₤, 3.70 | 3.80¢ |
| No. 28 | ₩ ₤, 3.80 | 3.90¢ |

#### Russia, Planished, &c.

Genuine Russia, according to assortment ₩ ₤ 11@14¢
Patent Planished ₩ ₤ A, 11¢; B, 10¢, net.

#### Galvanized.

Nos. 14 to 16 ₩ ₤, 3.45@3.60¢
Nos. 18 to 20 ₩ ₤, 3.70@3.90¢
Nos. 22 to 24 ₩ ₤, 4.00@4.20¢
No. 26 ₩ ₤, 4.25@4.50¢
No. 27 ₩ ₤, 4.55@4.80¢
No. 28 ₩ ₤, 4.85@5.10¢
No 30 ₩ ₤, 6.00@6.30¢
No. 20 and lighter, 36 inches wide, 25¢ higher.

### Foreign Steel from Store—

| | |
|---|---|
| Best Cast | ₩ ₤ 15 ¢ |
| Extra Cast | ₩ ₤ 18 @ 20 ¢ |
| Swaged, Cast | ₩ ₤ 16 ¢ |
| Best Double Shear | ₩ ₤ 15 ¢ |
| Blister, 1st quality | ₩ ₤ 13 ¢ |
| German Steel, Best | ₩ ₤ 10 ¢ |
| 2d quality | ₩ ₤ 9 ¢ |
| 3d quality | ₩ ₤ 8 ¢ |
| Sheet Cast Steel, 1st quality | ₩ ₤ 15 ¢ |
| 2d quality | ₩ ₤ 14 ¢ |
| 3d quality | ₩ ₤ 12 ¢ |
| R. Mushet's "Special" | ₩ ₤ 46 ¢ |
| " " " Annealed | ₩ ₤ 75 ¢ |
| " " "Titanic" | ₩ ₤ 19 ¢ |
| Hobson's Choice XX Extra Best | ₩ ₤ 35 ¢ |
| Jessop Self Hardening | ₩ ₤ 45 ¢ |
| Seamans' "Nelson" Steel | 40 ¢ |
| Hobson's "Soho" Special Self-Hardening | ₩ ₤ 43 ¢ |

## METALS—

### Tin—

| Duty.—Pigs, Bars and Block. Free. | Per ₤ |
|---|---|
| Banca, Pigs | 30½@31¼¢ |
| Straits, Pigs | 30½@31¼¢ |
| Straits in Bars | 31½@32¼¢ |

### Tin Plates—

#### American Charcoal Plates.

Caliand Grade:
IC, 14 x 20 $6.75
IX, 14 x 20 8.25
Melyn Grade:
IC, 14 x 20 6.25
IX, 14 x 20 7.75
Allaway Grade:
IC, 14 x 20 5.75
IX, 14 x 20 6.85

#### American Coke Plates—Bessemer—

IC, 14 x 20 ..... 108 ₤ ..... $4.75@4.90
IX, 14 x 20 $5.80@5.95

#### American Terne Plates—

IC, 20 x 28 $10.00
IX, 20 x 28 $12.00

#### Tin Boiler Plates, American—

XX, 14 x 26 ..... 112 sheets ..... $12.00
XX, 14 x 28 ..... 112 sheets ..... 13.00
XX, 14 x 31 ..... 112 sheets ..... 14.50

### Copper—

DUTY: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

### Ingot—

Lake 18 @13¼¢
Casting 12¾@13 ¢

### Sheet and Bolt—

February 2, 1902. Net.

Prices, in cents per pound. Sheet 30 x 60.

| Not wider than | Not longer than | And longer than | 64 oz. & over, 9th. sheet, 30 x 60 and heavier. | 32 oz. to 64 oz. 25 to 30 lb. | 24 oz. to 32 oz. 18¾ to 25 lb. | 16 oz. to 24 oz. 12½ to 18¾ lb. | 14 oz. and 15 oz. 11 to 11½ lb. | 12 oz. and 13 oz. 9½ to 11 lb. | 10 oz. and 11 oz. 7½ to 9½ lb. | 8 oz. and 9 oz. 6¼ to 7½ lb. | Lighter than 8 oz. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ins. | Ins. | Ins. | | | | | | | | | |
| 30 | 72 | ..... | 18 | 18 | 18 | 18 | 19 | 20 | 21 | 24 | 27 |
| 30 | 96 | 72 | 18 | 18 | 18 | 18 | 19 | 21 | 24 | 27 | |
| 30 | ..... | 96 | 18 | 18 | 18 | 18 | 20 | 24 | | | |
| 36 | 72 | ..... | 18 | 18 | 18 | 18 | 20 | 22 | 25 | 28 | |
| 36 | 96 | 72 | 18 | 18 | 18 | 18 | 20 | 24 | 27 | | |
| 36 | 120 | 96 | 18 | 18 | 18 | 19 | 21 | | | | |
| 36 | ..... | 120 | 18 | 18 | 19 | 20 | | | | | |
| 48 | 72 | ..... | 18 | 18 | 19 | 20 | 22 | 25 | 28 | | |
| 48 | 96 | 72 | 18 | 18 | 19 | 21 | 23 | 26 | | | |
| 48 | 120 | 96 | 18 | 18 | 20 | 22 | 26 | | | | |
| 48 | ..... | 120 | 18 | 19 | 21 | 24 | | | | | |
| 60 | 72 | ..... | 18 | 18 | 19 | 21 | 24 | 29 | | | |
| 60 | 96 | 72 | 18 | 18 | 20 | 22 | 27 | | | | |
| 60 | 120 | 96 | 18 | 19 | 21 | 24 | | | | | |
| 60 | ..... | 120 | 19 | 20 | 22 | 26 | | | | | |
| 72 | 96 | ..... | 18 | 19 | 21 | 26 | | | | | |
| 72 | 120 | 96 | 18 | 20 | 23 | 28 | | | | | |
| 72 | ..... | 120 | 19 | 21 | 26 | | | | | | |
| 108 | 96 | ..... | 19 | 21 | 24 | | | | | | |
| 108 | 120 | 96 | 20 | 22 | 25 | | | | | | |
| 108 | ..... | 120 | 21 | 23 | 27 | | | | | | |
| wider than 108 | 132 | ..... | 22 | 24 | | | | | | | |
| | ..... | 132 | 24 | 23 | | | | | | | |

Rolled Round Copper, ¾ inch diameter and over, ₩ ₤ 18¢.
Circles, Segments and Pattern Sheets, 3¢ ₩ ₤ advance over price of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper. 14 oz. ₩ square foot and heavier, 1¢ ₩ ₤ over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ ₤ over the foregoing prices.
All Polished Copper, 20 in. wide and under. 1¢ ₩ ₤ advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₩ ₤ advance over the price for Cold Rolled Copper.

### Planished Copper—

1¢ ₩ ₤ more than Polished Copper.

### Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ ₤ 2¢
12 oz. and up to 14 oz. to square foot, ₩ ₤ 2½¢
10 oz. and up to 12 oz., ₩ ₤ 3¢
Lighter than 10 oz., ₩ ₤ 4¢
Circles less than 8 in. diameter, 2¢ ₩ ₤ additional
Circles over 13 in. diameter are not classed as Copper Bottoms.
Polished Copper Bottoms and Flats, 1¢ ₩ ₤ extra.

### Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.
*List Feb. 20, 1901.*

| Nos. | 0000 to 3 Base | 9 and 10 | | 11 and 12 |
|---|---|---|---|---|
| | | ¼¢ | | ½¢ ₩ ₤ adv. |
| Nos. | 13 | 14 | 15 | |
| | ¾¢ | ⅞¢ | 1¢ | 1¼¢ ₩ ₤ adv. |
| Nos. | 17 | 18 | 19 | 20 |
| | 1½¢ | 2¢ | 2½¢ | 2½¢ ₩ ₤ adv |

### Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
Feb. 6, 1899. Net. Outside Diameter.

| Stubs' W.G. | B. & S. W.G. | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ | ⅞ | 1 | 1¼ | 1½ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4-11 | 5- 9 | ... | ..... | ... | ..... | 33 | 31 | 30 | 29 | 28 | 27 | 25 | 24 |
| 12 | 10 | ... | ..... | 37 | 35 | 33 | 31 | 30 | 29 | 28 | 27 | 25 | 24 |
| 13 | 11 | ... | ..... | 37 | 35 | 33 | 31 | 30 | 29 | 28 | 27 | 25 | 24 |
| 14 | 12 | ... | 41 | 37 | 35 | 33 | 31 | 30 | 29 | 28 | 27 | 25 | 24 |
| 15 | 13 | ... | 42 | 38 | 36 | 33 | 32 | 31 | 30 | 30 | 28 | 26 | 25 |
| 16 | 14 | ... | 43 | 39 | 37 | 34 | 33 | 32 | 31 | 30 | 29 | 26 | 25 |
| 17 | 15 | ... | 44 | 40 | 38 | 35 | 34 | 33 | 32 | 31 | 30 | 27 | 26 |
| 18 | 16 | 61 | 46 | 42 | 39 | 36 | 35 | 34 | 32 | 31 | 30 | 28 | 27 |
| 19 | 17 | 62 | 47 | 43 | 40 | 37 | 36 | 35 | 34 | 33 | 32 | 30 | 29 |
| 20 | 18-19 | 64 | 49 | 44 | 41 | 39 | 38 | 37 | 36 | 35 | 34 | 32 | 31 |
| 21 | 20 | 66 | 51 | 46 | 43 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 |
| 22 | 21 | 71 | 56 | 48 | 44 | 42 | 41 | 40 | 39 | 38 | 37 | 37 | 36 |
| 23 | 22 | 76 | 61 | 50 | 46 | 44 | 43 | 42 | 41 | 40 | 39 | 39 | 39 |
| 24 | 23 | 81 | 66 | 53 | 48 | 46 | 45 | 44 | 43 | 41 | 40 | 40 | 41 |
| 25 | 24 | 86 | 72 | 56 | 51 | 49 | 47 | 46 | 45 | 43 | 43 | 44 | 45 |

Copper Bronze and Gilding Tube, 3¢ ₩ ₤ additional

### Iron Pipe Sizes—Brass

| ⅛ | ¼ | ⅜ | ½ | ¾ | 1 | 1¼ | 1½ | 2 | 2½ | 3 | 3½ | 4 | 4½ | 5 | 6 inch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 36 | 33 | 29 | 27 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 23 | 23 | 27 | 28¢₩₤ |

Copper, Bronze or Gilding Tubes, 3¢ ₩ ₤ additional

### Brazed Brass Tubing.

(*To No. 19, inclusive.*) Jan. 6, 1898.
Brown & Sharpe's gauge standard.

Per ₤.

| | | | | |
|---|---|---|---|---|
| Plain Round Tube, ¼ in. | up to 2 in. | | | $0.35 |
| " | " | ⅜ | " | .36 |
| " | " | ½ | " | .38 |
| " | " | ⅝ | " | .41 |
| " | " 5-16 | | ⅝ " | .48 |
| " | " ½ | | 5-16" | .65 |
| " | " 3-16 | | ½ " | 1.00 |
| " | " ⅜ | | 3-16" | 1.50 |
| Smaller than ⅛ inch | | | | Special |
| 2 inch to 3 inch, to No. 19, inclusive | | | | .38 |
| 3 inch | | | | .40 |
| Over 3 inch to 3½ inch, inclusive | | | | .45 |
| Over 3½ inch | | | | .50 |

Bronze and Copper, advance on Brass List, 3 cents.
Discount from list 5 ..... 40%

### Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

| Common High Brass Wider than and including | in. 2 12 | in. 12 14 | in. 14 16 | in. 16 18 | in. 18 20 | in. 20 22 | in. 22 24 | in. 24 36 |
|---|---|---|---|---|---|---|---|---|
| To No. 20 inclusive | .22 | .23 | .25 | .27 | .29 | .31 | .33 | .36 |
| Nos. 21 22, 23 and 24 | .22 | .24 | .26 | .28 | .30 | .32 | .34 | .37 |
| Nos. 25 and 26 | .23 | .24½ | .27 | .29 | .31 | .33 | .35 | .38 |
| Nos. 27 and 28 | .23 | .25 | .28 | .30 | .32 | .34 | .33 | .39 |

| Common High Brass Wider than and including | in. 26 28 | in. 28 30 | in. 30 32 | in. 32 34 | in. 34 36 | in. 36 38 | in. 38 40 |
|---|---|---|---|---|---|---|---|
| To No. 20, inclusive | .39 | .42 | .46 | .50 | .55 | .60 | .65 * |
| Nos. 21, 22, 23 and 24 | .40 | .43 | .47 | .51 | .56 | .61 | .68 |
| Nos. 25 and 26 | .41 | .44 | .48 | .52 | .57 | .63 | .71 |
| Nos. 27 and 28 | .42 | .45 | .49 | .53 | .58 | .65 | .75 |

* Special prices not less than 80 cents.
Add ½¢ ₩ ₤ additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List ..... 30%

### Wire in Coils. List February 26, 1896.

| Brown & Sharpe's gauge the standard. | Com. high brass. | Low brass. | Gild'g bronze and copper |
|---|---|---|---|
| All Nos. to No. 10, inclusive | $0.23 | $0.27 | $0.28 |
| Above No. 10 to No. 16 | .23½ | .27½ | .28½ |
| No. 17 and No. 18 | .24 | .28 | .32 |
| No. 19 and No. 20 | .25 | .29 | .33 |
| No. 21 | .26 | .30 | .34 |
| No. 22 | .27 | .31 | .35 |
| No. 23 | .28 | .32 | .36 |
| No. 24 | .30 | .34 | .38 |
| No. 25 | .32 | .36 | .40 |
| No. 26 | .35 | .39 | .43 |
| No. 27 | .38 | .42 | .46 |
| No. 28 | .42 | .46 | .51 |
| No. 29 | .45 | .49 | .54 |
| No. 30 | .48 | .52 | .62 |
| No. 31 | .51 | .55 | .67 |
| No. 32 | .55 | .59 | .73 |
| No. 33 | .59 | .63 | .82 |
| No. 34 | .64 | .68 | .95 |
| No. 35 | .70 | .74 | 1.30 |
| No. 36 | .76 | .80 | 1.50 |
| No. 37 | 1.90 | 1.04 | 1.70 |
| No. 38 | 1.30 | 1.34 | 2.00 |
| No. 39 | 2.00 | 2.00 | 3.25 |
| No. 40 | 2.60 | 2.60 | 5.75 |

Discount, Brass Wire, 35%; Copper Wire, NET. List November 16, 96.
Spring Wire, 2¢ ₩ ₤ advance.

### Tobin Bronze—

Straight, but not turned, Rods, ⅝ to 3 in. diameter, ₩ ₤, net ..... 17¢
Finished Piston Rods, ⅝ to 2½ in. diameter, ₩ ₤ net. 18¢
Other sizes and extreme lengths, special prices.

### Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ ₤
Western Spelter ..... 5¼@5⅝¢

### Zinc.

Duty: Sheet, 2¢ ₩ ₤.
600 ₤ casks ..... 6¾¢ | Per ₤ ..... 6¾@7¢

### Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ ₤. Pipe and Sheets, 2½¢ ₩ ₤.

| | |
|---|---|
| American Pig | 4.45@4½¢ |
| Bar | 5 @5⅛¢ |
| Pipe | 6½¢ ..... 20% off |
| Tin Lined Pipe | 12½¢ ..... 20% off |
| Block Tin Pipe | 42½¢ ..... 20% off |
| Sheet Lead | 7¼¢ ..... 20% off |

Old Lead in exchange, 3¼¢ ₩ ₤.

### Solder.

½ & ¼, guaranteed ..... 20 @20½¢
No. 1 ..... 17½@19 ¢
Prices of Solder indicated by private brand vary according to composition.

### Antimony—

Duty, ¾¢ ₩ lb.

| | |
|---|---|
| Cookson | ₩ ₤ 10¼@10¾¢ |
| Hallett's | ₩ ₤ 8¼@8¾¢ |
| U. S. | ₩ ₤ 8¼@8¼¢ |

### Aluminum—

Duty: Crude, 8¢ ₩ ₤. Plates, Sheets, Bars and Rods, 13¢ ₩ ₤.

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:
Small lots ..... ₩ ₤ 37¢
100-₤ lots ..... ₩ ₤ 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:
Small lots ..... ₩ ₤ 34¢
100-₤ lots ..... ₩ ₤ 33¢
Aluminum Sheet, B. & S. gauge. 50 ₤ or more

| Wider than | 6-in. | 14-in. | 24-in. |
|---|---|---|---|
| And including | 14-in. | 24-in. | 30-in. |
| | ₩ ₤. | ₩ ₤. | ₩ ₤. |
| Nos. 13 to 19 | $0.42 | $0.44 | $0.47 |
| No. 20 | .44 | .46 | .49 |
| Nos. 21 to 23 | .46 | .48 | .51 |
| No. 24 | .46 | .50 | .53 |
| No. 25 | .47 | .51 | .54 |
| No. 26 | .47 | .54 | .59 |
| No. 27 | .48 | .57 | .62 |
| No. 28 | .48 | .57 | .64 |
| No. 29 | .49 | .60 | .69 |
| No. 30 | .50 | .64 | .77 |

*Note.*—Lots of less than 50 ₤ 5¢ ₩ ₤ extra.

Aluminum Wire, B. & S. Gauge.

| | | | |
|---|---|---|---|
| Larger than No. 9 | ₩ ₤ 40¢ | No. 15 | ₩ ₤ 43¢ |
| No. 9 to No. 10 | ₩ ₤ 40½¢ | No. 17 | ₩ ₤ 50¢ |
| No. 11 | ₩ ₤ 41 ¢ | No. 18 | ₩ ₤ 55¢ |
| No. 12 | ₩ ₤ 41½¢ | No. 19 | ₩ ₤ 60¢ |
| No. 13 | ₩ ₤ 42 ¢ | No. 20 | ₩ ₤ 65¢ |
| No. 14 | ₩ ₤ 42½¢ | No. 21 | ₩ ₤ 85¢ |

### Old Metals.

*Dealers' Purchasing Prices Paid in New York.*

| | |
|---|---|
| Heavy Copper | ₩ ₤ 10¼¢ |
| Light and Tinned Copper | ₩ ₤ 9¼¢ |
| Heavy Brass | ₩ ₤ 8¼¢ |
| Light Brass | ₩ ₤ 6½¢ |
| Lead | ₩ ₤ 3½¢ |
| Tea Lead, Sewer Break Enameled | ₩ ₤ 3¼¢ |
| Zinc | 2¼¢ |

### Tea Kettles—

*Galvanized Tea Kettles:*

| Inch | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| Each | 45c | 50c | 55c | 65c |

Copper ..... 40%
Brass ..... 50%

### Steel Hollow Ware.

Avery Spiders & Griddles ..... 65@65&5%
Avery Kettles ..... 60%
Porcelained ..... 50&5@50&10%
Never Break Spiders and Griddles ..... 65&5%
..... 30%
..... 25%
..... 40%
and Ga